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(54) GLAZING SYSTEM

(57) The invention relates to a glazing arrangement for a balcony, terrace, or a corresponding space, which comprises a frame structure with a bottom rail and a top rail and which glazing arrangement comprises sideways movable window elements (111) equipped with a bottom strip (111a) between the top and bottom rails of the frame structure of the glazing arrangement, and the glazing arrangement also comprises a locking arrangement (L) that comprises a locking device (L1) with a locking tongue (L4) and a counter-part (L5) for the locking tongue, and the locking device (L1) of the locking arrangement is at the bottom strip (111a) of the window element and the operating interface (L2) of the locking device is on the side of the window element. In the invention, the locking arrangement that prevents the movement of the window element in the longitudinal direction of the bottom rail is of a type in which the counter-piece (L5) for the locking tongue (L4) of the locking device (L1) at the bottom strip of the window element is on the bottom rail of the glazing arrangement.

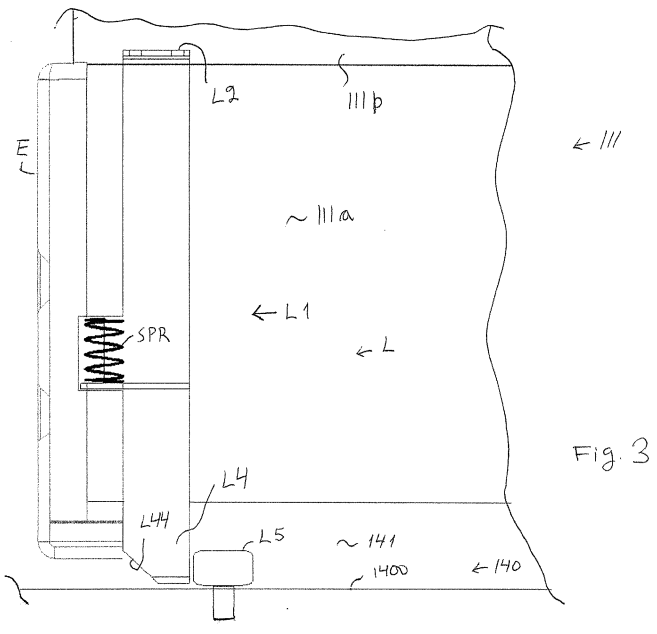

Fig. 3

EP 3 078 800 A1

Description

Field

[0001] The invention relates to a glazing arrangement for a balcony, terrace, or a corresponding space, which comprises a frame structure with a bottom rail and a top rail and which glazing arrangement comprises sideways movable window elements equipped with a bottom strip between the top and bottom rails of the frame structure of the glazing arrangement, and the glazing arrangement also comprises a locking arrangement that comprises a locking device with a locking tongue and a counter-part for the locking tongue, and the locking device of the locking arrangement is at the bottom strip of the window element and an operating interface of the locking device is on the side of the window element.

Background

[0002] In a balcony or terrace, no walls blocking the visibility are desired but, on the other hand, an open balcony or terrace is windy and possibly cold, too. However, visibility and protection from wind can be accomplished by means of a sliding window arrangement which comprises a plurality of sliding window elements, usually made of glass. When necessary, the sliding window elements may also be moved aside, i.e. the sliding window arrangement may be opened.

[0003] A basic structure in sideways moving sliding window arrangements is that the sliding window elements are parallel to but not in line with each other, whereby in the open position the sliding window elements are partly or entirely parallel to each other, from which position they can be moved to their mainly consecutive positions in such a manner that when the sliding window elements are in their closed position, they are parallel mainly in their end areas. In addition, a sideways moving sliding window arrangement is known, in which the window elements are consecutively aligned and not parallel at all.

[0004] In sliding window arrangements, the locking of the glazing arrangement is arranged in such a manner that the actual lock part is on the bottom strip, or bottom frame strip of the sliding window element, and the counter-part of the locking tongue of the lock part is on a vertical rail situated on the vertical edge of the installation opening of the glazing arrangement, and the locking tongue thus protrudes from the bottom part of the window element end, from the end of the bottom strip, or glass pane strip. Some known structures are disclosed in publications EP2476840 and EP2476828.

[0005] Glazing arrangements of this type are not satisfactory in their present form, because they present problems in that the manner of implementation of the locking arrangement and the positioning of its parts sets limitations to the design and especially use of the locking arrangement, thus impeding the use of the entire glazing arrangement. Another problem is that the cooperation between the locking tongue and its counter-part through the end of the window element is difficult when it is, for instance, necessary to build a glazing arrangement including a corner, in which a vertical bar/column is not wanted, which means that there no longer is an easy location for the counter-part required by the locking tongue. A corresponding problem also exists in a straight glazing arrangement, i.e. one without a corner, when a vertical bar is not wanted on the edge of the installation opening.

[0006] Thus, there is a need for a novel glazing arrangement.

Brief description

[0007] An object of the invention is to provide an improved glazing arrangement. This is achieved by a glazing arrangement that is characterized in that the locking arrangement preventing the movement of the window element in the longitudinal direction of the bottom strip is of a type in which the counter-part for the locking tongue of the locking device at the bottom strip of the window element is on the bottom rail of the glazing arrangement and that the dimensions and position of the locking device on the side of the bottom strip does not protrude much in such a manner that the operating interface of the locking remains between the window elements so as not to restrict the reciprocal movement of the window elements.

[0008] Preferred embodiments of the invention are described in dependent claims. The preferred embodiments enhance the advantages of the basic invention.

[0009] The glazing arrangement according to the invention provides several advantages, a particularly significant advantage being that the glazing arrangement is now easier to design and use. The invention permits a clean and safe manner of achieving the locking of the longitudinal movement of the window elements, i.e. the locking of the movement in the direction of the bottom strip. The invention facilitates use, while the structure remains easy to manufacture and install.

List of figures

[0010] The invention will now be described in more detail in connection with preferred embodiments and with reference to the accompanying drawings, in which

Figure 1 shows the two outermost sideways movable window elements of the glazing arrangement between the top and bottom rails,

Figure 2 shows four sideways movable window elements on four guide ridges of the bottom rail,

Figure 3 is a side view of a locking arrangement in its locking position at the bottom strip,

Figure 4 is a side view of the locking arrangement at the bottom strip with the locking system in the preliminary step of locking/release,

Figure 5 shows the outermost and innermost window elements on the bottom rail as seen from the direction of the bottom rail and window elements.

Description of embodiments

[0011] Referring to Figures 1 to 5, Figures 1 to 2 in particular, the glazing arrangement comprises at least two window elements, such as sliding window elements or other sliding pane elements, for instance four sliding window elements 111 to 114. Each window 111b to 114b may be made for instance of glass or another material that permeates light to a desired extent and in a desired manner. Each window element has a translucent sheet or pane, such as a glass pane 111b, 112b, 113b, 114b. Underneath each pane or otherwise in a lower part, there are bottom strips 111a, 112a, 113a, 114a, which may be an aluminium strip, such as a profile strip, manufactured by extrusion, as a bottom frame or glass pane strip. In the examples shown in the figures, there is no top horizontal strip, i.e. top horizontal frame, in the window elements, but one may be provided if necessary. The bottom strip, such as 111a, is the bottom frame strip of the sliding window element 111 having no vertical frame, through which the window element, such as 111, is supported on a bottom rail 140.

[0012] The number of window elements may vary as necessary between 1 to 10, for instance. The invention is not restricted to any specific number of window elements.

[0013] The window elements 111 to 114 are provided between a top rail structure 130 and a bottom rail structure 140. Between the window element and the rails 130, 140, there may be a slide pad or a roller structure (not shown). The rails 130, 140 may be made of aluminium by extrusion, for example.

[0014] A glazing arrangement for a balcony, terrace or a corresponding space is thus provided, comprising, between the top rail 130 and the bottom rail 140 of the glazing arrangement, sliding window elements 111 to 114 which have no vertical frames and which are movable into a parallel relative position and into a successive relative position and which are not in line with each other. When the sliding window elements 111 to 114 are parallel, the glazing arrangement is in an open position. When the sliding window elements 111 to 114 are in succession, although slightly unaligned, the glazing arrangement is in a closed position.

[0015] The locking manner of the invention is not only suitable for the parallel glazing arrangement shown in the figures, but also for an arrangement in which the window elements are in line, such as in succession on one and the same guide ridge.

[0016] With reference to Figures 3 to 5, in particular, the glazing arrangement comprises a locking arrangement L. The locking arrangement comprises a locking device L1, an operating interface L2, such as a handle or some other grip structure L2 for a user, a locking tongue L4, and a counter-piece L5 for the locking tongue L4. The locking arrangement L comprised by the glazing arrangement is positioned such that the locking part L1 of the locking arrangement, together with the locking tongue L4, is at the bottom strip 111a, mainly inside it, in which case only the operating interface L2 is visible. If the window elements are widely spaced apart, the arm of the locking tongue may then be on the outer surface of the bottom strip. The operating interface L2 is also on the bottom strip 111a of the window element or spaced apart therefrom by a spacer and higher up in the window element. The operating interface L2 may thus be spaced from the position of the locking device by a spacer, such as string or wire, supported to the surface of the window element pane. This is especially significant in terrace glazing or glazings of other type where the window pane extends all the way down, because the locking tongue L4 is then also positioned low, mounted on the locking device on the bottom strip, in which case it is easier for the user that the operating interface is lifted 80 to 100 cm higher, for instance.

[0017] The counter-piece L5 or L55 for the locking tongue L4 is at the bottom rail 140 below the window elements.

[0018] Thus, a glazing arrangement for a balcony, terrace or a corresponding space is provided, which comprises a frame structure F with a bottom rail 140 and top rail 130 and which glazing arrangement comprises sideways movable window elements 111 to 114 equipped with a bottom strip, such as 111a, between the top rail 130 and bottom rail 140 of the frame structure F of the glazing arrangement. In an embodiment, the window elements 111 to 114 are without vertical frames.

[0019] The glazing arrangement also comprises a locking arrangement L that comprises a locking device L1 with a locking tongue L4 and a counter-piece for the locking tongue L4. The locking device L1 of the locking arrangement is at the bottom rail 111a of the window element 111 and the operating interface L2 of the locking device is on the side of the window element.

[0020] The locking arrangement L that prevents the movement of the window element in the longitudinal direction of the bottom rail is of a type in which the counter-piece L5 for the locking tongue L4 of the locking device L1 at the bottom strip 111a of the window element is on the bottom rail 140 of the glazing arrangement.

[0021] The figures show that in an embodiment of the bottom rail 140, there are parallel support parts, such as ridges 141 to 144, for the bottom strips 111a, 112a, 113a, 114a of the window elements 111 to 114. The support for the window elements is thus provided from below their bottom strip, and their movement control from the support projections 141 to144, or ridges 141 to 144, on the bottom rail 140. This way, the bottom rail 140 comprises parallel guide ridges 141 to 144 for different window elements, and the counter-piece L5 of the locking arrangement for the locking tongue L4 of the locking device is then located in the area between the guide ridges on the bottom rail.

It is also possible that there are more window elements than guide projections supporting them in such a manner, for instance, that in the middle of the arrangement, there are two window elements in succession on the same guide ridge.

[0022] In an embodiment, the counter-piece L5 is formed on or fastened to an inner bottom 1400 of the bottom rail 140 directed toward the bottom of the bottom strip 111 of the window element in such a manner, for instance, that the counter-piece L5 is a projection, such as a screw or bolt L5, on the bottom rail and extends in the free intermediate space between the parallel guide ridges of the bottom rail. This can be seen in Figures 1 and 5, in particular.

[0023] With reference to Figure 5, it is also possible that the counter-piece L55 is a chamber L55 in the bottom rail, in which case, in an embodiment, the chamber forming the counter-piece L55 in the bottom rail is formed on the inner bottom of the bottom rail directed toward the bottom of the bottom strip of the window element.

[0024] The operating interface L2 is a handle or some other grip structure for a human hand.

[0025] Thus, locking is achieved by moving the outermost window element 111 to its extreme position that closes the glazing arrangement, while the other window elements are coupled to follow its movement. With the operating interface L2, the locking tongue L4 is then able to cooperate with the counter-piece L5 (projection, chamber) at the bottom strip 140 below the window element 111 and locking is achieved. The outermost element 111 that is locked in place also prevents, by means of contact elements (not shown) between the window elements, the other window elements from moving. The locking/opening between the counter-piece chamber L55 and locking tongue L4 shown in Figure 5 takes place correspondingly.

[0026] Next, we will describe the locking and opening with reference to Figures 3 to 5. Figure 4 is a side view of the locking arrangement at the bottom strip 111 with the locking system in the preliminary step of locking/release.

[0027] In other words, a first interpretation of Figure 4 is that the window element has been moved to the left to the extent that the tip of the locking tongue L4 furnished with a guide surface L44, such as an inclined surface, has, lifted by the counter-piece L5, risen against the spring force of a spring SPR on top of the counter-piece L5 to its top position.

[0028] Next, when the movement of the window element 111 is continued from Figure 4 to its final position that closes the front of the glazing arrangement, i.e. the position of Figure 3, the locking tongue has returned to its bottom position and, at the same time, over the counter-piece L5 behind it, i.e. to the left side of the counter-piece L5 in Figure 3. This way, locking has been achieved, because the counter-piece L5 prevents the movement of the window element 111 to the right since the locking tongue L4 would hit the counter-piece L5.

[0029] Next, in Figure 3, the user lifts from the operating interface L2 an arm that is below it, and the locking tongue L4 at its bottom end rises to its top position, and when the user slightly moves the window element 111 to the right, we end up in a situation according to a second interpretation of Figure 4, in which the window is being moved more and more to the right to the open and unlocked position of the glazing arrangement. Should the movement of the window element to the right continue, the locking projection L4 that has risen against the spring SPR would fall to its bottom position, but now on the right-hand side of the counter-piece L5, which means that the locking is completely open.

[0030] Thus, in an embodiment, the locking device comprises a spring SPR or a corresponding resistant structure, against the force of which the counter-piece L5 is arranged to liftingly guide the locking tongue L4 into the locking position in relation to the counter-piece L5. The spring SPR resists and thus also guides the lifting or similar movement of the locking tongue by the user, when the locking is being opened, and, therefore, the movement is not slack. The spring is not necessary but is beneficial.

[0031] Figure 5, in particular, shows that the locking tongue L4 and even the arm above it, with the exception of the operating interface L2, such as handle L2, are protected inside the bottom strip 111a.

[0032] After the opening movement of the locking tongue L4, the outermost sliding window, i.e. window element 111, and following it, even the other window elements, can be moved, i.e. the locking is opened.

[0033] Because there are one fewer pane gaps, i.e. gaps between the window elements 111 to 114, than window elements, that is, because in the example of Figures 1 and 5, there are four window elements but only three gaps between the window elements or only three gaps between the guide ridges 141 to 144, by designing the locking tongue in two different ways for Figure 5, it is possible to operate the locking counter-piece positioned according to the innermost window gap, i.e. third window gap from outside, i.e. the third, i.e. innermost guide ridge gap, with the operating handle that is located inside the fourth window element 114, i.e. on the side against the window element 113 (Figure 1). This provides the advantage that the counter-piece of none of the window element lock-ings is on the outer edge of the bottom strip, and even the locking counter-piece of the fourth or innermost window element 114 can be hidden in the space of the innermost or third guide ridge gap. In such a case, the bottom rail 140 can even be embedded in the floor without even the innermost counter-piece of the bottom strip, i.e. the one located on the balcony side, hampering this operating possibility.

[0034] The locking may be located on either end of the window element, which means that it does not have to be on the outer edge of the pane opening, i.e. on the left edge in Figures 1, 3 to 4. In other words, the locking may even be on the inner edge of the outer glass element, i.

e. on the right edge, and the direction of inclination of the locking tongue bevel is then different, such as 90 degrees to a different direction than in Figures 3 to 4.

[0035] The positioning and dimensions of the locking structures according to the invention are thus as follows: the dimensions and position on the side of the bottom strip 111a, i.e. glass strip, are so thin or horizontally so small that they do not restrict the relative movement of the window elements and the operating handle L2 of the locking remains between the window elements. Thus, there is an intermediate clearance of most preferably at least a few millimetres between the locking device and its operating handle L2 or a similar operating element and the adjacent sliding window element that is movable to a parallel position.

[0036] It is apparent to a person skilled in the art that as technology advances, the basic idea of the invention may be implemented in many different ways. The invention and its embodiments are thus not restricted to the examples described above but may vary within the scope of the claims.

Claims

1. A glazing arrangement for a balcony, terrace, or a corresponding space, which comprises a frame structure (F) with a bottom rail (140) and a top rail (130) and which glazing arrangement comprises sideways movable window elements (111 to 114) equipped with a bottom strip (111a to 114a) between the top (140) and bottom (130) rails of the frame structure of the glazing arrangement, and the glazing arrangement also comprises a locking arrangement (L, L1, L5) that comprises a locking device (L1) with a locking tongue (L4) and a counter-part (L5, L55) for the locking tongue (L4), and the locking device (L1) of the locking arrangement is at the bottom strip (111a) of the window element (111) and the operating interface of the locking device (L1) is on the side of the window element, **characterised in that** the locking arrangement (L) preventing the movement of the window element in the longitudinal direction of the bottom rail (140) is of a type in which the counter-piece (L5, L55) for the locking tongue (L4) of the locking device (L1) at the bottom strip (111a) of the window element (111) is on the bottom rail (140) of the glazing arrangement, and the dimensions and positioning of the locking device (L1) on the side of the bottom strip (111a) are small in dimension such that the operating interface (L2) of the locking remains between the window elements so that the relative movement of the window elements is not restricted.

2. A glazing arrangement as claimed in claim 1, **characterised in that** the bottom rail (140) comprises parallel guide ridges (141 to 144) for different window elements (111 to 114), and the counter-piece (L5) of the locking arrangement (L) for the locking tongue (L4) of the locking device (L1) is then located in the area between the guide ridges (141, 142; 143, 144) on the bottom rail (140).

3. A glazing arrangement as claimed in claim 1 or 2, **characterised in that** the counter-piece (L5, L55) is formed or fastened to the inner bottom (1400) of the bottom rail (140) directed toward the bottom of the bottom strip (111a) of the window element (111).

4. A glazing arrangement as claimed in any one of preceding claims 2 to 3, **characterised in that** the counter-piece is a projection on the bottom rail and extends in the free intermediate clearance between the parallel guide ridges of the bottom rail.

5. A glazing arrangement as claimed in any one of preceding claims 2 to 3, **characterised in that** the counter-piece is a chamber in the bottom rail.

6. A glazing arrangement as claimed in claim 5, **characterised in that** the chamber forming the counter-piece (L55) in the bottom rail (1400) is formed to the inner bottom (1400) of the bottom rail (140) directed toward the bottom of the bottom strip (114a) of the window element (114).

7. A glazing arrangement as claimed in any one of preceding claims 1 to 6, **characterised in that** the operating interface (L2) is distanced by means of a spacer to be higher in the window element in relation to a height-wise position of the locking tongue (L4), allowing an operating height of the operating interface (L2) of the locking arrangement to be elevated.

8. A glazing arrangement as claimed in any one of preceding claims 1 to 7, **characterised in that** the operating interface (L2) is a handle or some other grip structure.

9. A glazing arrangement as claimed in any one of preceding claims 1 to 8, **characterised in that** the movable sliding window elements (111 to 114) are arranged to be sliding window elements which are movable to adjacent and consecutive relative positions and not in line with but parallel to each other.

10. A glazing arrangement as claimed in any one of preceding claims 1 to 8, **characterised in that** the sideways movable window elements (111 to 114) have no vertical frames.

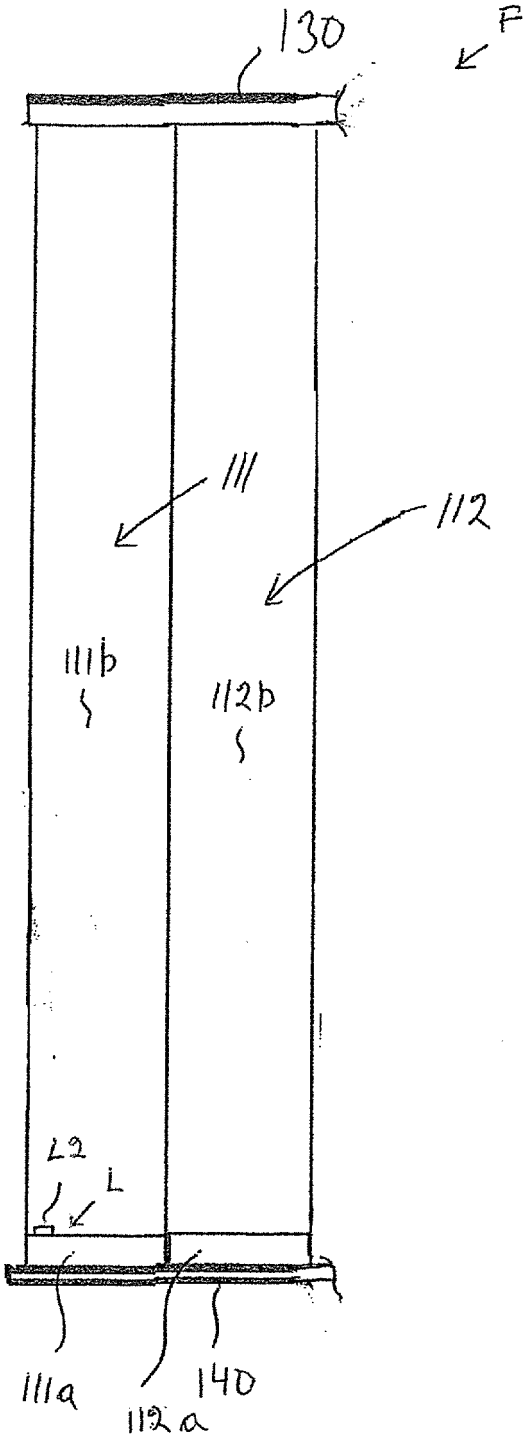

Fig. 1

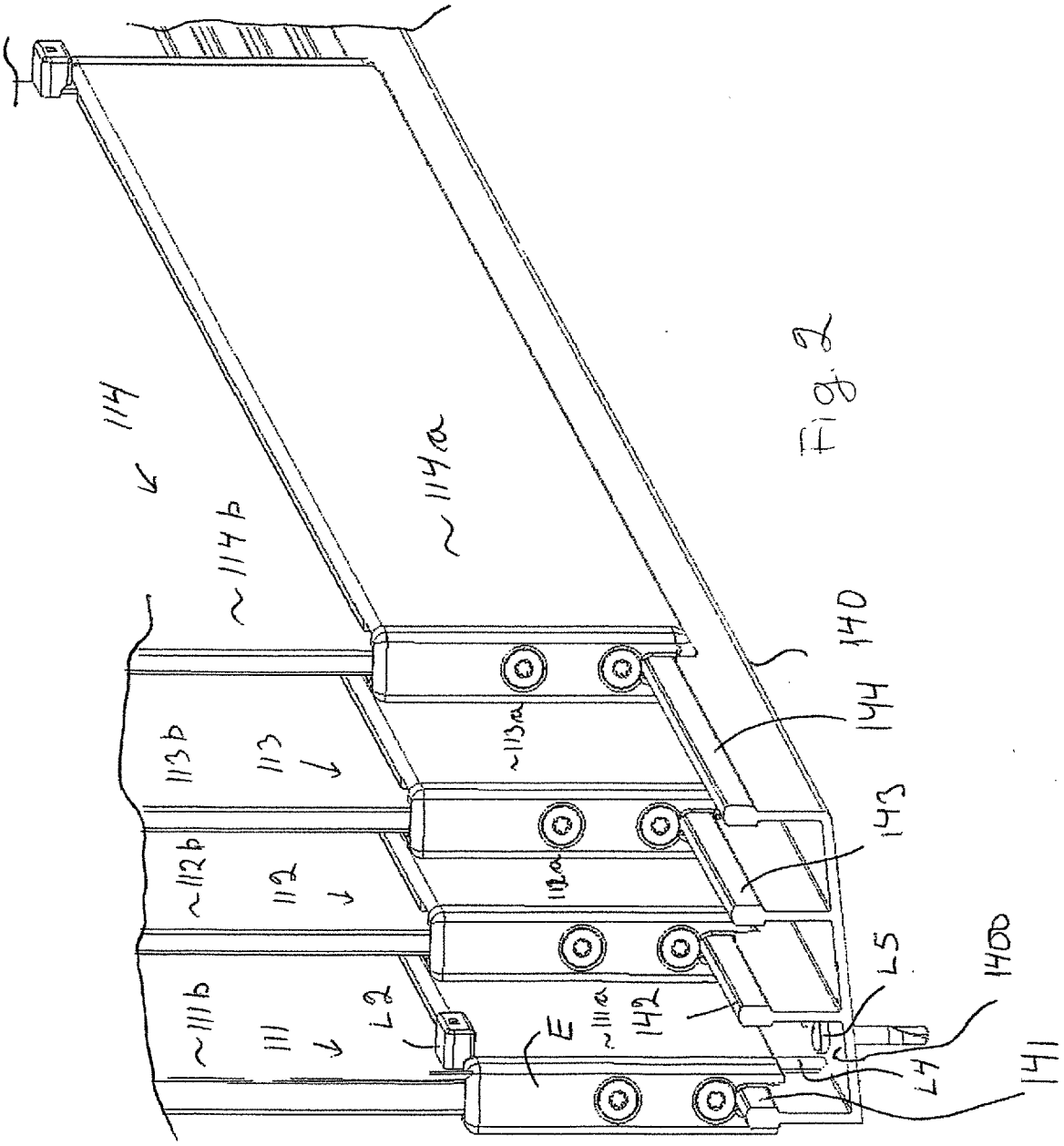
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Fig. 2

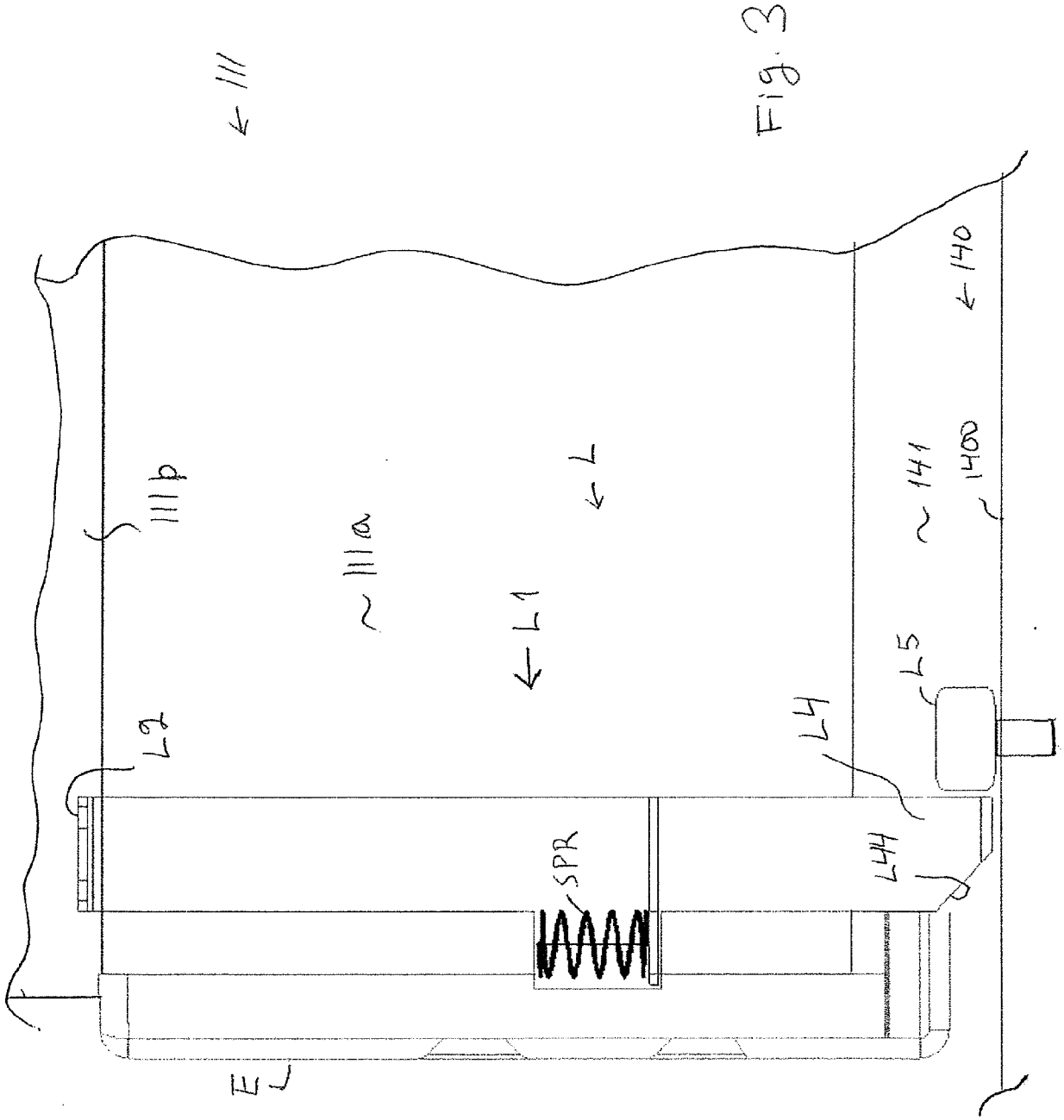
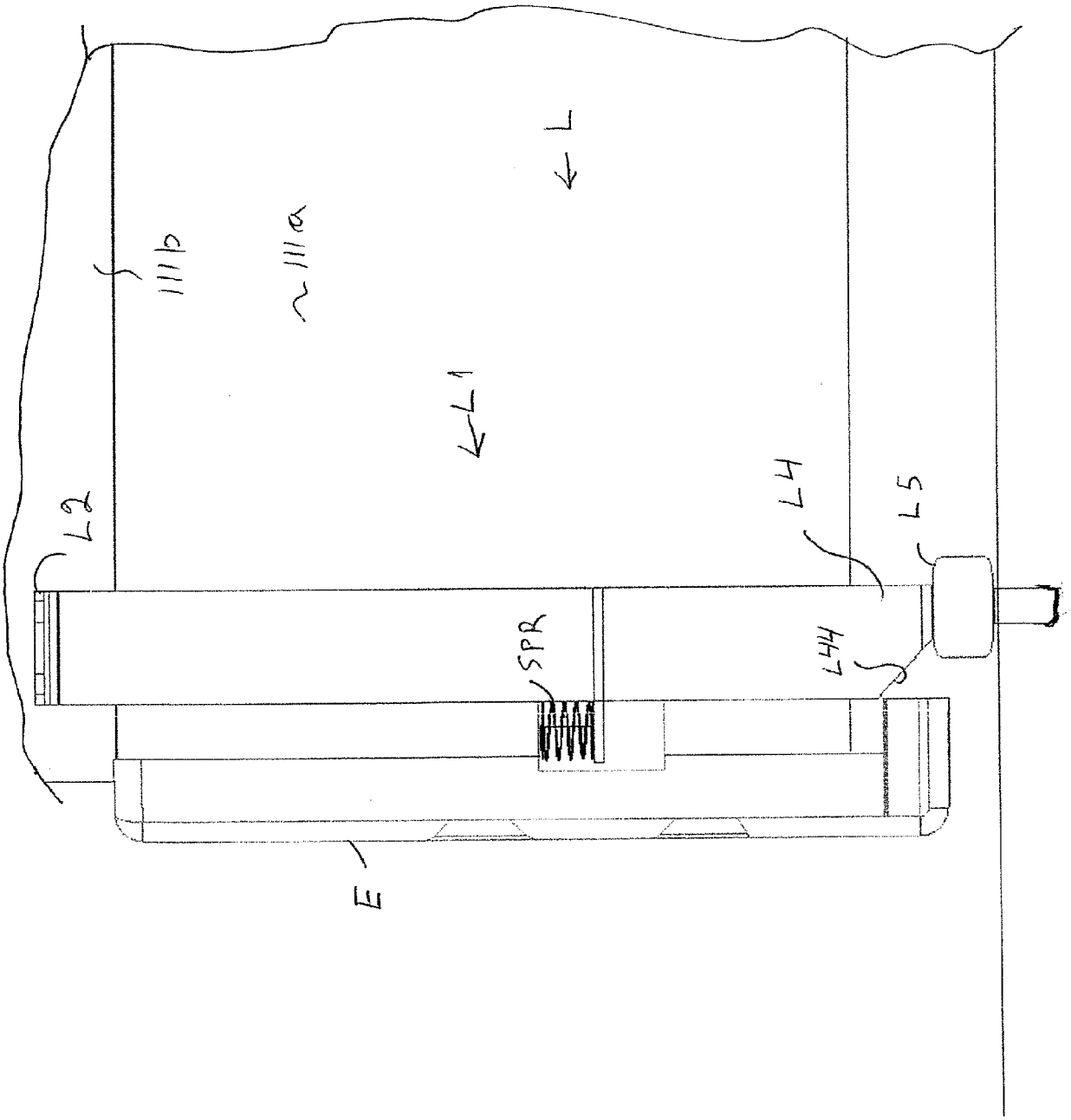
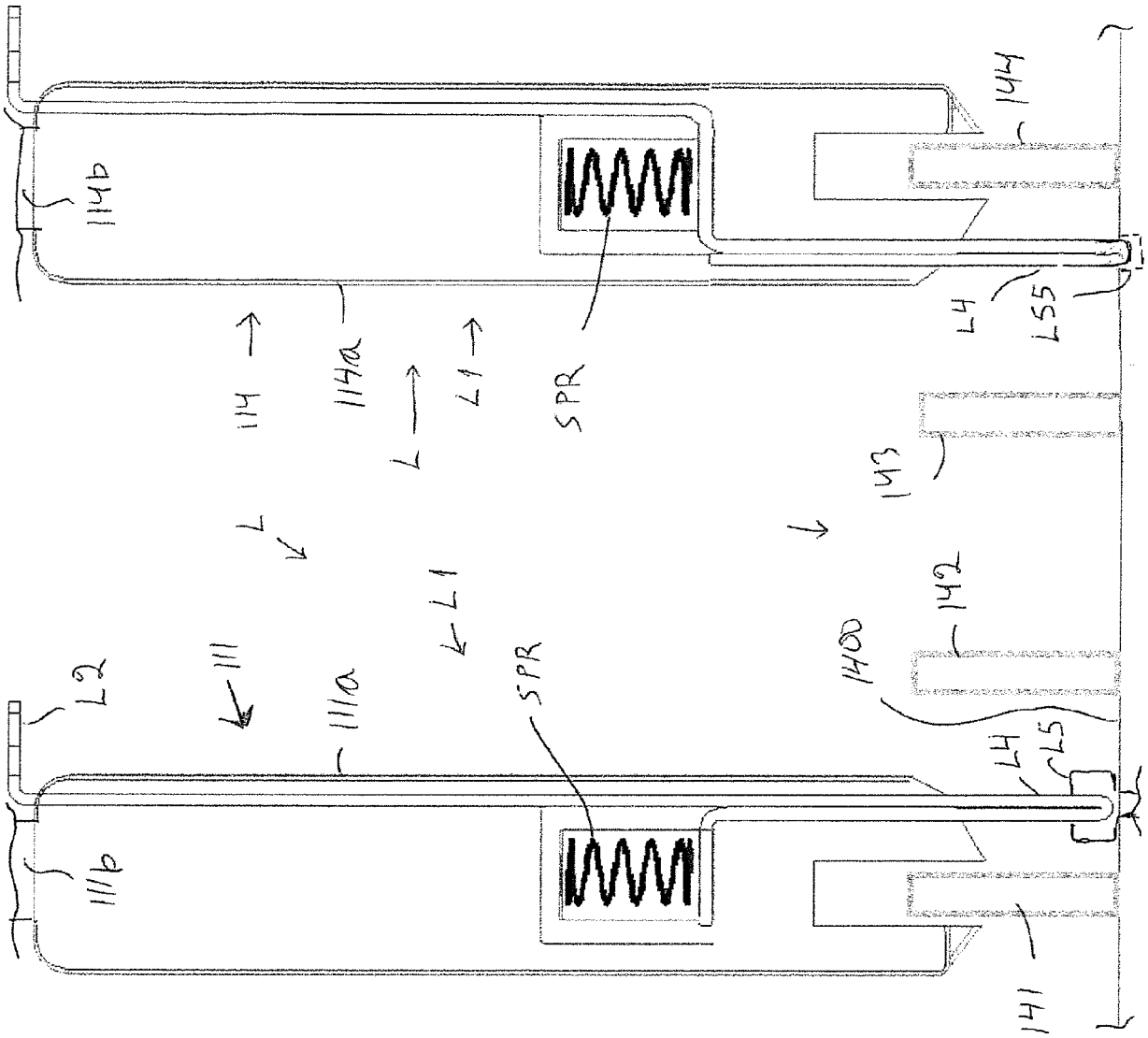


Fig. 3

Fig. 4

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114
L
L1
SPR
144
L4
L55
143
142
1400
L2
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111a
111b
L5
141

Fig.5

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EUROPEAN SEARCH REPORT

Application Number
EP 16 16 4232

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Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
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TECHNICAL FIELDS SEARCHED (IPC)

E06B
E05D
E05B

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	16 August 2016	Blancquaert, Katleen

CATEGORY OF CITED DOCUMENTS

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

REFERENCES CITED IN THE DESCRIPTION

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