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(54) **Glazing arrangement**

(57) A glazing system comprises at least two window elements (120 to 126), of which at least one window element (112 to 126) is movable. Each window element (120 to 126) comprises a top strip structure (128). The top strip structure (128) of each window element (120 to 126) comprises a disc-like structure (210) for minimum distances between the window elements (120 to 126).

The top strip structure (128) of each movable window element (122 to 126) comprises at least one supporting roll (208) that enables the moving of a window element (122 to 126) and is arranged to form part of the circumference of said disc-like structure (210).

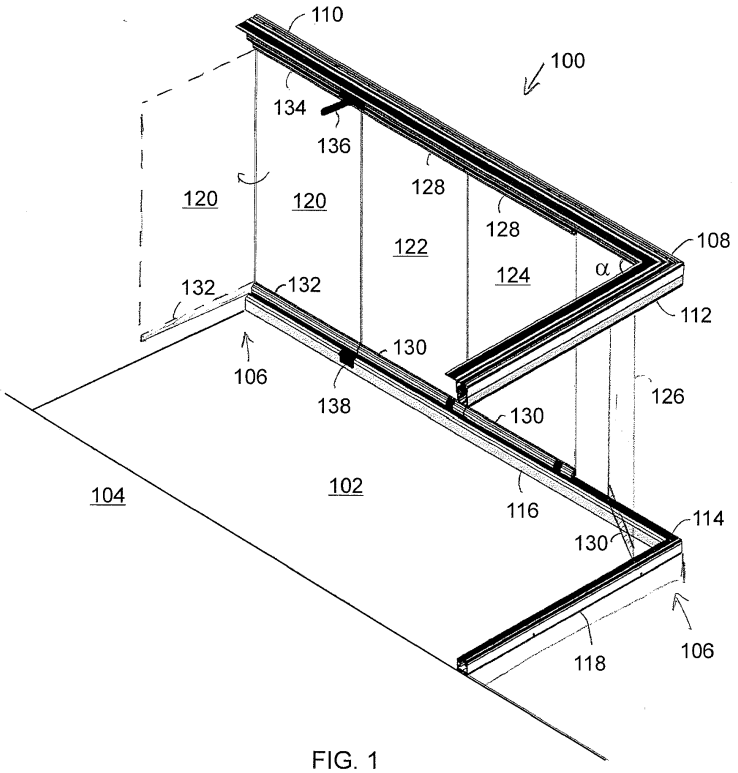


FIG. 1

EP 2 518 249 A1

Description

Field

[0001] The invention relates to a glazing system for a balcony, for example.

Background

[0002] A balcony glazing system comprises several glass panes with strip structures at the top and bottom edges thereof. A balcony glazing system also consists of top and bottom frame structures that are fastened to the balcony structures. The top frame structure is usually a long shape that is nearly a U profile with the open portion downward and having a bracket extending inward. The bottom frame structure is similar to the top frame structure, a straight shape, nearly a U profile with its open part upward. The top strip structure of each glass pane comprises rolls at least on the edges of the pane. The rolls support against a protrusion in the top frame structure, which makes it possible to move the glass panes along the top strip structure to different parts of the balcony. The bottom strip structure of each glass pane is positioned in the U groove of the bottom frame structure, which prevents the movement of the window element in any other direction than in the longitudinal direction of the top and bottom frames.

[0003] Movable glass panes can usually be moved along the frame structures to the same place where they no longer protect the balcony. They can then also be turned crosswise to the longitudinal axis of the frame structures and stacked close to each other. When turning the panes crosswise, the top frame structure and the turning part of the top strip structure of each glass pane act as hinges.

[0004] However, glazing systems of the prior art have their problems. The moving and locking mechanisms of the strip structures of the panes require space, which is why the actual transparent section of the pane needs to be made that much smaller. Thus, there is a need for a new type of glazing system.

Brief description

[0005] It is an object of the invention to provide an improved glazing system. This is achieved by the glazing system of claim 1.

[0006] Some preferred embodiments of the invention are disclosed in the dependent claims.

[0007] The invention provides several advantages. The top and/or bottom strip structure of the window elements is compact and permits a large translucent portion in each window element.

List of figures

[0008] The invention will now be described in greater detail by means of preferred embodiments and the accompanying drawings, in which:

Figure 1 shows a balcony glazing system;
Figure 2 shows one window element of a balcony glazing system;
Figure 3A shows a roll and disc-like structure from the side;
Figure 3B shows a roll and disc-like structure from the top;
Figure 4 shows a roll in the top frame structure;
Figure 5 shows how the window element is turned sideways;
Figure 6 shows the roll and disc-like structure when the window element is turned sideways; and
Figure 7 shows how the window element is locked sideways while the roll acts as part of the circumference of the disc-like structure and defines the component density of the window elements.

Description of embodiments

[0009] In the following, various embodiments will be described with reference to the above-mentioned figures. However, the invention is not restricted to the disclosed embodiments but the presented solutions are examples of feasible implementation manners. Features of various embodiments may also be combined unless they are specifically conflicting or alternative with regard to their technical implementation.

[0010] The window elements are suited for use in a balcony or terrace, for instance. Let us now examine a solution related to the present glazing system by means of Figure 1. The glazing system 100 is generally suitable as transparent walls in a space 102 that may be a balcony or a terrace of a building 104.

[0011] A balcony can be defined as a space that extends outside the wall of a building, has a floor and a railing, and a door may open thereto from the building. A terrace is a similar space, but it may be thought to be on ground plane, so a separate floor is not necessarily included in a terrace.

[0012] The top frame structure 108 of the glazing system 100 comprises one or more straight top rail parts 110, 112 one after the other. There may be an angle α between the top rail parts 110, 112 at a possible corner 106. The angle between the top rail parts 110, 112 may be the same or different than the angle of the corner 106, but the angle α conforms with the corner 106. The top rail parts 110, 112 form a long shape that is nearly a U profile in cross-section, with the open portion downward.

[0013] The bottom frame structure 114 of the glazing system 100 may comprise one or more straight bottom rail parts 116, 118 that form at the corner 106 of the space 102 an angle in the same manner as the top frame structure 108. Each bottom rail part 116, 118 also has a shape that is nearly a U profile. The top frame structure 108 and the bottom frame structure 114 with their top and bottom

rails 110, 112, 116, 118 may be made of metal, such as aluminium.

[0014] The glazing system 100 comprises at least two window elements 120, 122, 124, 126, of which at least one window element 112 to 126 is movable. Each window element may comprise a pane made of glass or some other material that permeates light to a desired extent and in a desired manner. The pane may comprise agents absorbing and/or scattering optical radiation at a desired band (approximately 10 nm to 500 μm). This way, the pane may be resistant to ultraviolet radiation. Similarly, the permeation of infrared and thermal radiation may be adjusted in the pane. The pane may also be coloured, in which case its light transmission at different wavelengths is not the same. When the pane comprises scattering particles, its colour, diffused or un-diffused permeation may be controlled with the size and number of particles in a desired manner.

[0015] The top strip structure 128 of the glazing system 100 is fastened to at least one movable window element 112 to 126. The top strip structure 128 of each window element comprises two rolls, for instance, (rolls 108 in Figure 2) on the edges of the glass element 122 to 126. The rolls support against a bracket in the top rail part 110, 112, which makes it possible to move the window elements 122 to 126 along the top rail part 110, 112 of the top frame structure 108 to different parts of the space 102.

[0016] A bottom strip structure 130 of the glazing system 100 is fastened to the at least one movable window element 122 to 126. The bottom strip structure 130 of each window element is positioned in the U groove of the bottom frame structure 114, 116, which prevents the movement of the pane 122 to 126 in any other direction than in the longitudinal direction of the top and bottom frames 108, 114.

[0017] The glazing system 100 may also comprise at least one window element 120 that is not movable along the top frame structure 108 and bottom frame structure 114. Yet the window element 120 made stationary in this manner may comprise a bottom strip structure 132 and top strip structure 134 and be turnable sideways to open up the space 102 relative to the other rail parts 110, 116, to which the stationary window element 120 is fastened by its hinge structure. Figure 1 indicates with a dashed line the stationary pane 120 that has been turned sideways. For turning, the top strip structure 134 of the stationary pane 120 may have a handle 136 to help grip and turn it.

[0018] In Figure 1, the window element 126 is being moved over the corner 106.

[0019] The bottom frame structure 116 may have a port 138, with which the window elements 120 to 126 may be turned aside in the same manner as the window element 120 indicated by a dashed line.

[0020] Figure 2 shows one window element 100 that comprises a top edge strip structure 128 and a bottom edge strip structure 130. The top strip structure 128 may be continuous along the entire length of the pane, as shown by the dashed line, or the top strip structure 128 may comprise at least two separate parts, as shown by the continuous line. The top strip structure 128 comprises closed to the edge of the window element a roll 108 that is intended for moving the window element 100 along the top strip structure 108. The top strip structure 128 also comprises a disc-like structure 210 that serves as an adjuster of the distances between the window elements, when they are moved aside and stacked against each other to make the space 102 open. The strip structure 128 also comprises a support bracket 212. The support bracket 212 is usually a circle with a section defined by a chord shorter than the diameter deleted from it.

[0021] The top strip structure 128 comprises at the edge of the window element 100 a roll 208 for moving the window element along the top strip structure. However, this edge does not necessarily comprise a support bracket.

[0022] Figures 3A and 3B show a roll 208 and disc-like structure 210. In these figures, the roll 108 and disc-like structure 210 are at an angle to each other. Generally, the roll 108 and disc-like structure 210 may be at an angle differing from a right-angle, but most commonly the angle between the roll 108 and disc-like structure 210 is at least approximately 90°. The disc-like structure 210 comprises a round structure of the mid-part of the window element 100 fastening element, in which a bearing is part of the structure. The disc-like structure 210 is in the middle of a fastening fitting (the structure of Figure 3A) and together with the bearing forms an entity. From the disc-like structure 210 a part has been cut off, having a diameter larger than that of the roll 208 and a shape that conforms to some extent to the shape of the roll 208, and the roll 208 is positioned in its place, the roll being in size and shape such that it forms the cut-off part of the circumference of the disc-like structure 210. This way the solution provides a convenient, smaller and denser total structure, with which the window element 122 to 126 connects to the top rail part 110, 112 of the top frame structure 108.

[0023] The roll 208 forms the outer circumference of the disc-like structure 210 on the edge of the window element 122 to 126 on which the hinge for turning the window element 122 to 126 also resides.

[0024] In Figure 4, the top frame structure 108 abuts the structures 400 of the space. The top frame structure 108 comprises a support bracket 402, on which the roll 208 may roll back and forth. At the same time, the roll 208 together with the rest of the top strip structures 128 supports the window element 122 to 126.

[0025] Figure 5 shows a situation, in which the window elements are stacked aside to the edge of the balcony, for instance. One window element 500 has already been turned to a 90° angle to the direction of the top strip structure 128 and a second window element 122 to 126 is being turned. The turning takes place relative to the hinge that is on one edge of each window element 120 to 126. The first window element 500 does not necessarily need

to be movable along the top frame structure 108. When the movable window element 122 to 126 has been brought into place for turning into a stack, the top rail part 110, 112 of the top frame structure 108 has an opening 502 so that the roll 208, disc-like structure 210 and support bracket 212 can be detached from the top rail part 110, 112 elsewhere but the edge of the already turned window element 500.

[0026] Figure 6 shows the same situation as Figure 5, but Figure 6 now shows in more detail the roll 208, disc-like structure 210 and support bracket 212. When the window element 122 to 126 is turned, the roll 208 moves away from the support bracket 402 and into the open groove of the top rail part 110, 112 of the top frame structure 108, whereby the window element 122 to 126 may come down to some extent or even drop out of place. However, this does not happen, because the support bracket 212 then comes into contact with the second support bracket 600. At the same time, the locking comb 602 of the top frame structure 300 locks the window element 122 to 126 in place as the support bracket 212 twists into the recess in the comb 602.

[0027] Figure 7 shows the same situation as Figures 5 and 6. Figure 7 shows that when the support bracket 212 is a circle with a section defined by a chord shorter than the diameter removed from it (i.e. it is a half-moon in shape), the window element 122 to 126 may also be moved in the area of the locking comb 602 of the top frame structure 108 top rail part 110, 112. The removed section of the support bracket 212 makes it possible for the support bracket 212 to pass the brackets 700 of the locking comb 602, when the window element 122 to 126 moves in the direction of the top frame structure 108. But when the window element 122 to 126 is turned, the support bracket 212 pushes into the recess 702 of the locking comb 602 and the window element 122 to 126 can no longer move in the direction of the top frame structure 108. Figure 7 also shows how the roll 208 of the first window element 120 is turned crosswise into the open groove 702 of the top frame structure 108. In this example, the first window element 120 is also possibly movable by means of the roll 208. Because the roll 208 forms the circumference of the disc-like structure 210, it also defines the distance between the window elements 120 to 126 to be suitable, since the roll 208 of any window element 120 to 124 is in contact with the disc-like structure 210 of the top strip structure 128 of the next window element 122 to 126.

[0028] Even though the first window element 120 were not movable, the disc-like structure 210 of the first window element 120 without the roll 208 defines the minimum distance between the window elements 120 to 126. However, the second and third window element 122, 124 touch each other by their circumferential structures 210, to which the roll 208 also belongs. Correspondingly, any consecutive window elements i, i + 1, wherein i is an integer larger than two, touch each other by their disc-like structures 210, to which the roll 208 also belongs, in the manner shown in Figure 7.

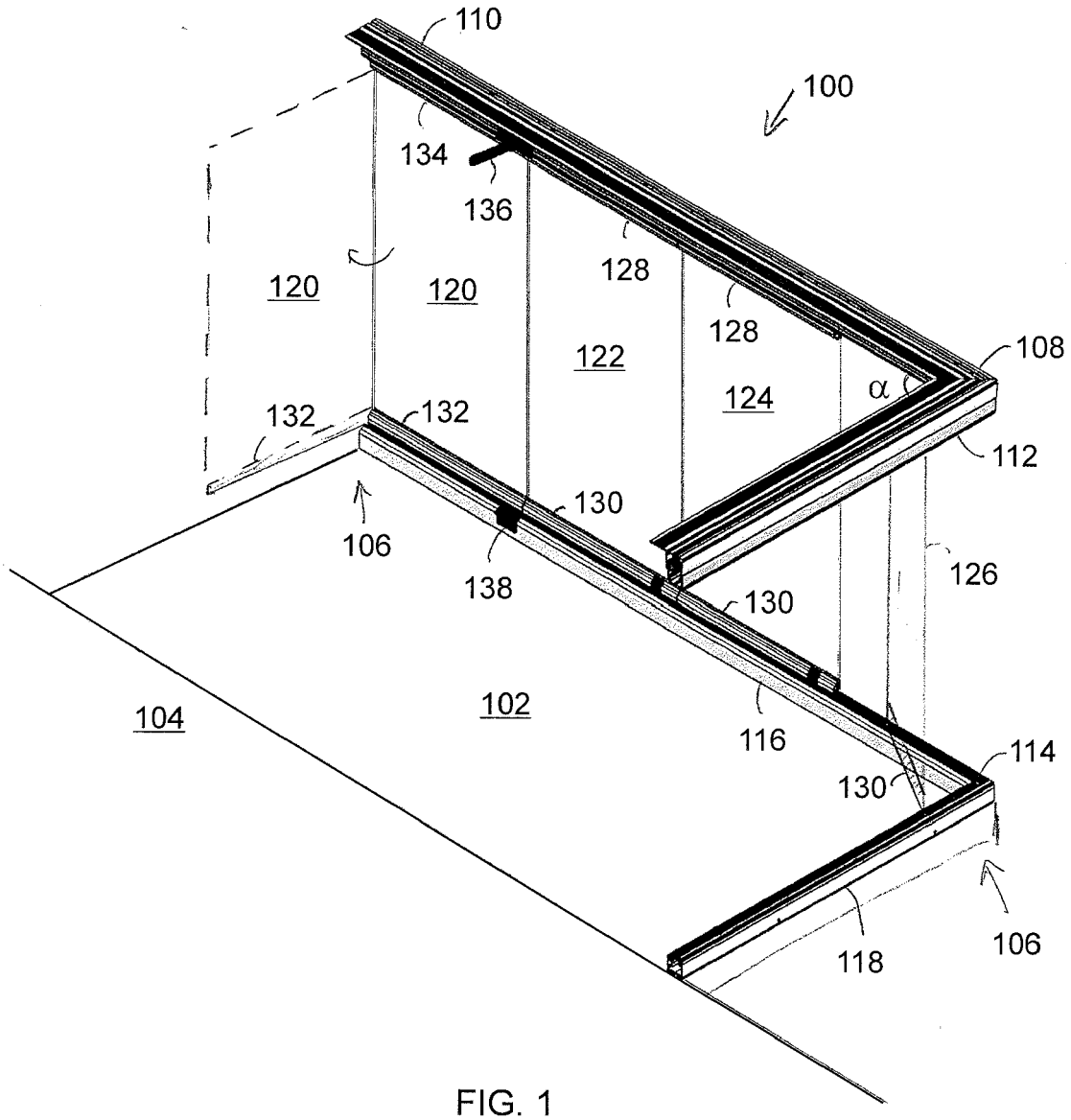
[0029] Even though the invention is described above with reference to the examples of the attached drawings, it is clear that the invention is not restricted to them, but may be modified in a variety of ways within the scope of the accompanying claims.

Claims

1. A glazing system, **characterised in that** it comprises at least two window elements (120 to 126), of which at least one window element (122 to 126) is movable;
   each window element (120 to 126) comprises a top strip structure (128);
   the top strip structure (128) of each window element (120 to 126) comprises a disc-like structure (210) for minimum distances between the window elements (120 to 126); and
   the top strip structure (128) of each movable window element (122 to 126) comprises at least one supporting roll (208) that enables the moving of a window element (122 to 126) and is arranged to form part of the circumference of said disc-like structure (210).

2. A glazing system as claimed in claim 1, **characterised in that** in consecutive window elements (120 to 126), the disc-like structure (210) of the first window element (120 to 124) and the roll (208) on the circumference of the disc-like structure (210) of the second window element (122 to 126) are arranged to touch each other when the window elements (120 to 126) have been turned and stacked to the side.

3. A glazing system as claimed in claim 1, **characterised in that** the disc-like structure (210) with its roll (208) is on the hinged edge of the top strip structure (128) of the window element (122 to 126) which makes it possible to turn the window element (122 to 126).


110
100
134
136
128
128
120
120
122
124
108
α
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106
138
126
130
102
104
116
114
130
118
106

FIG. 1

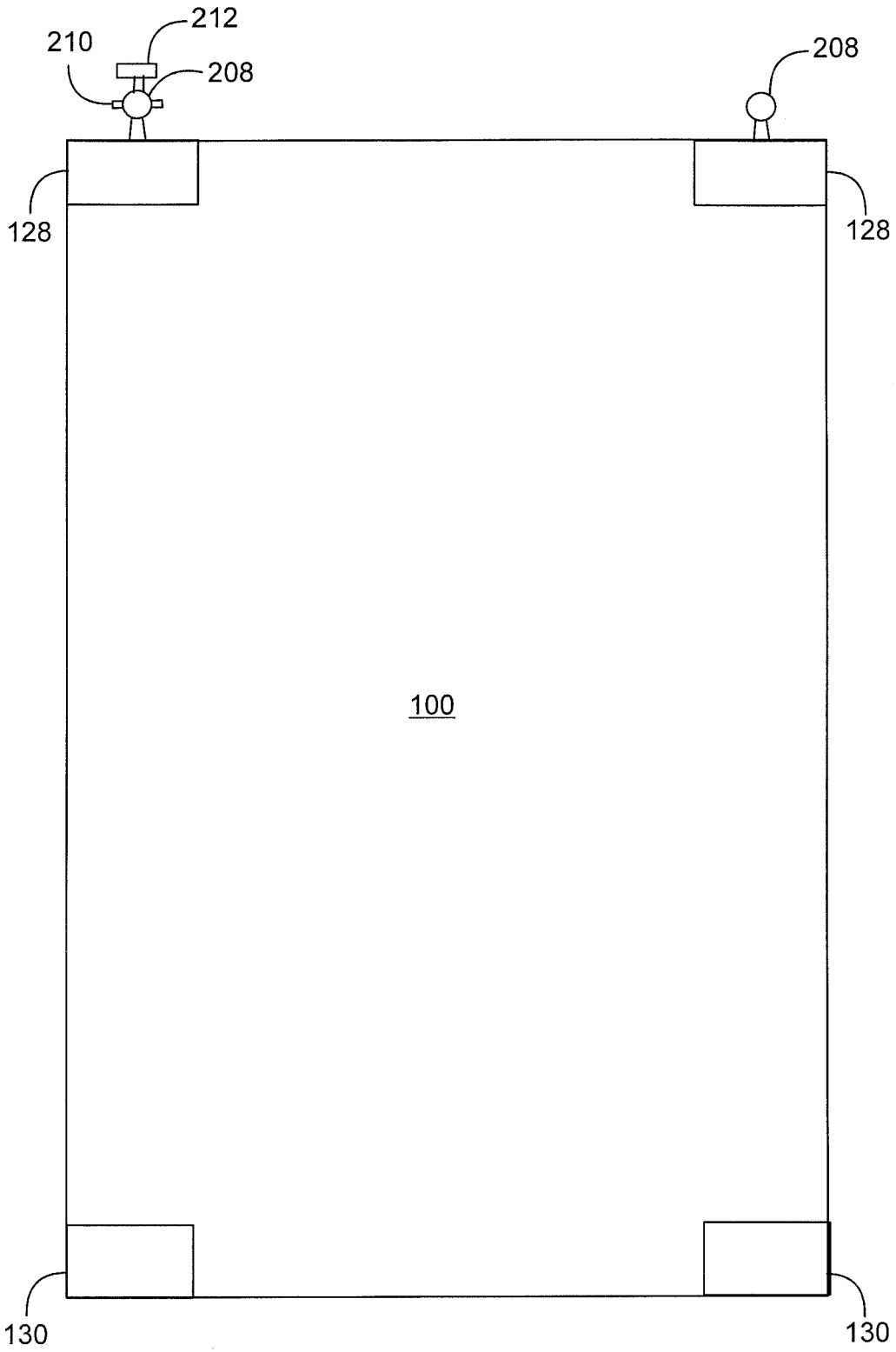

FIG. 2

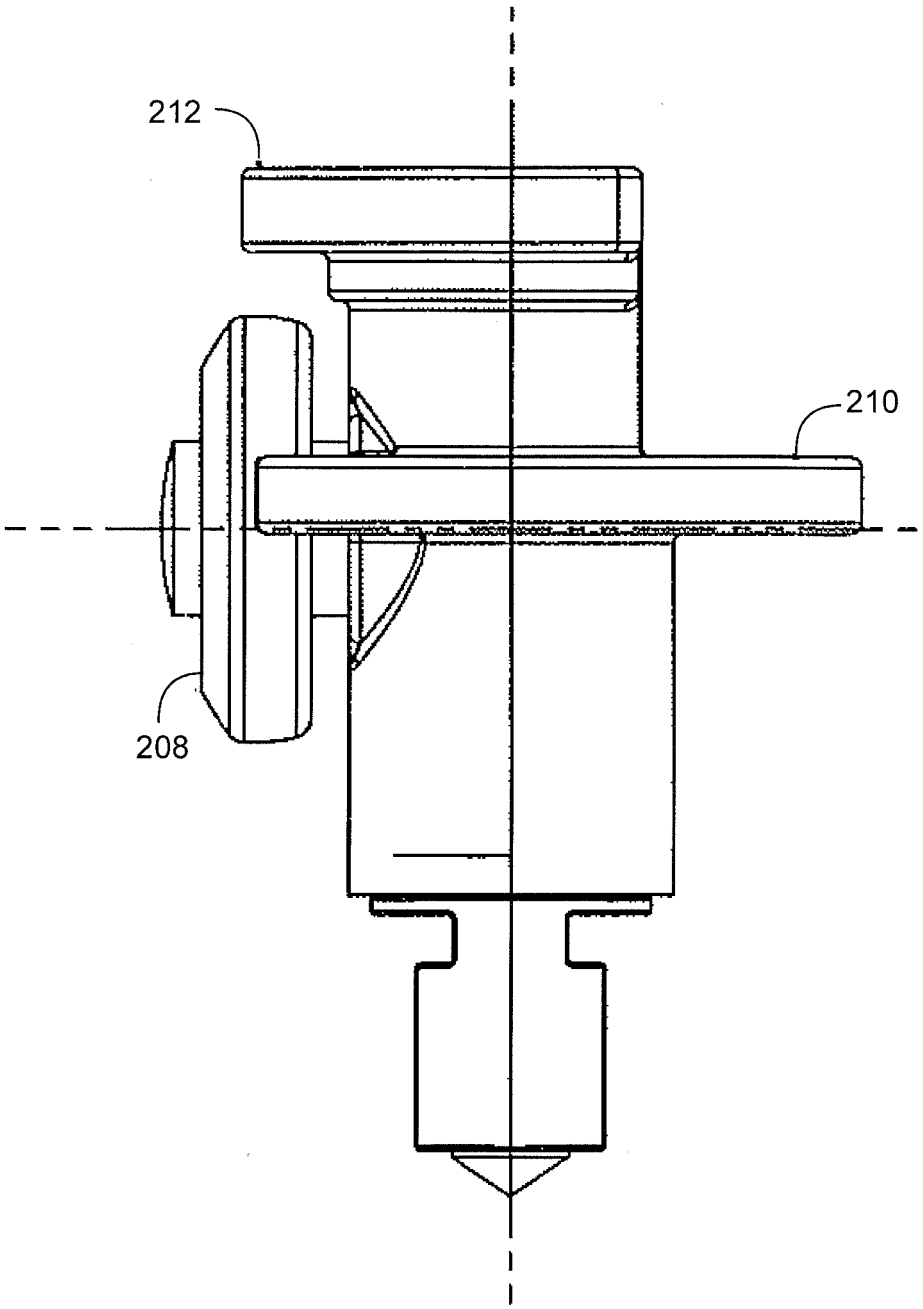

FIG. 3A

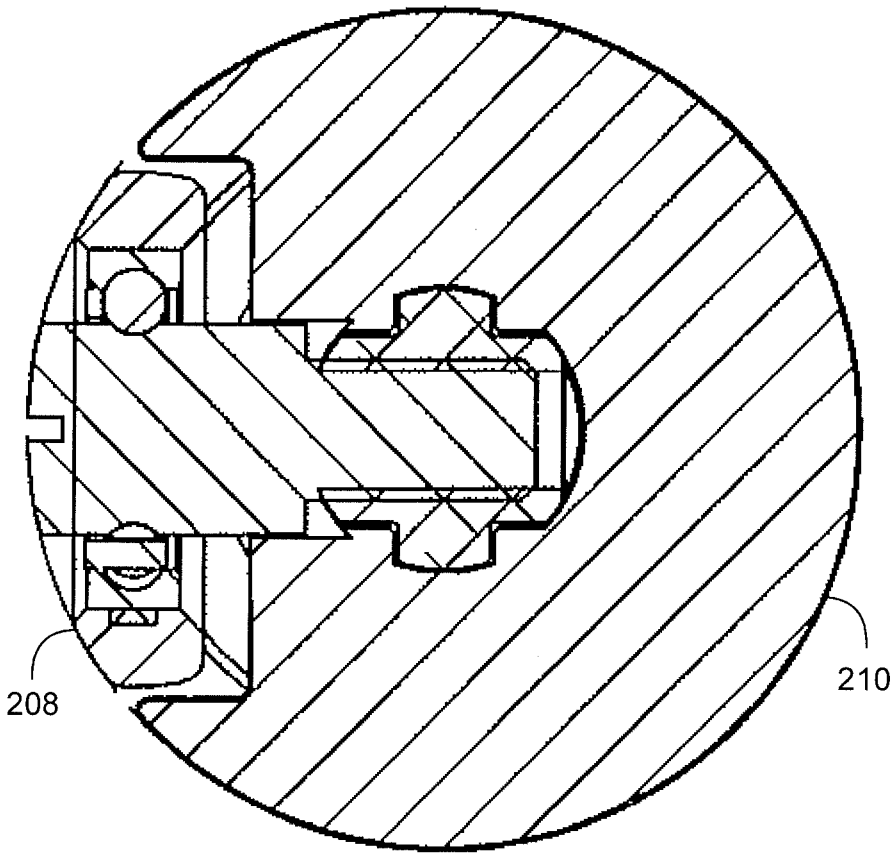

FIG. 3B

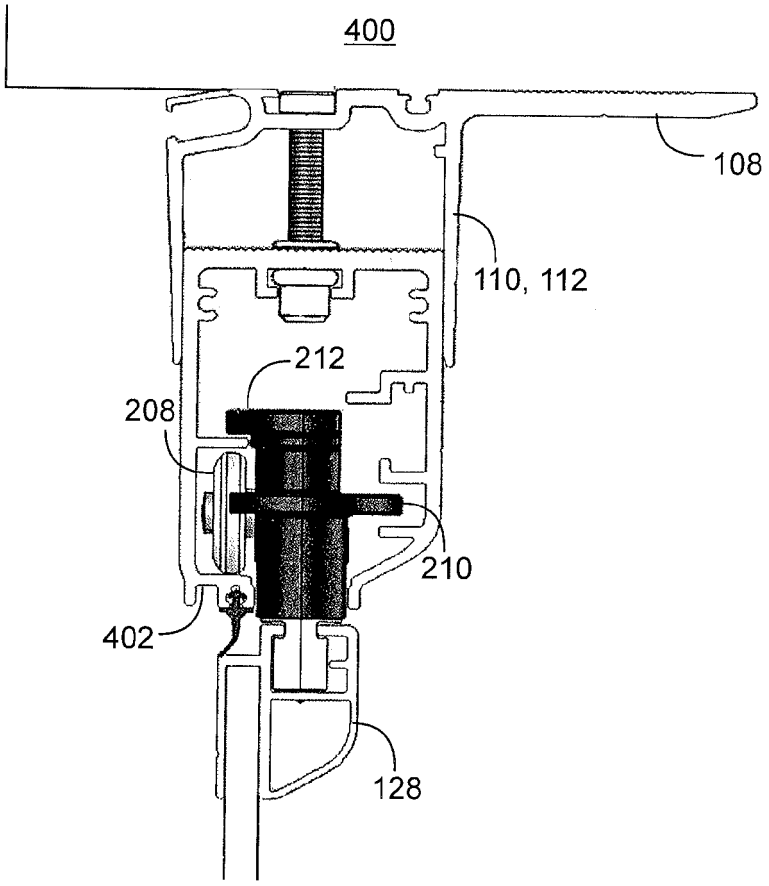
400
108
110, 112
212
208
210
402
128

FIG. 4

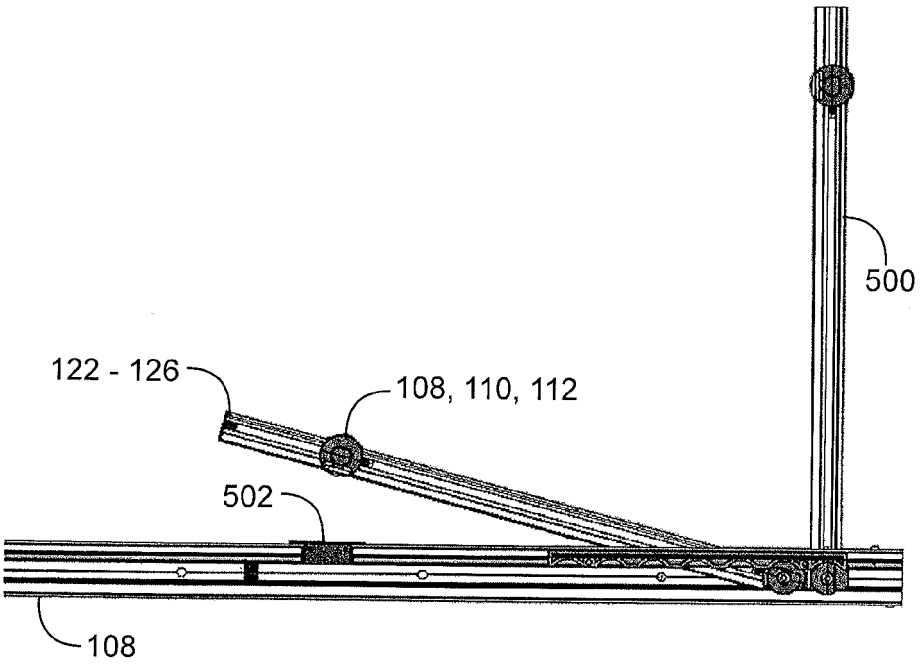
500
122 - 126
108, 110, 112
502
108

FIG. 5

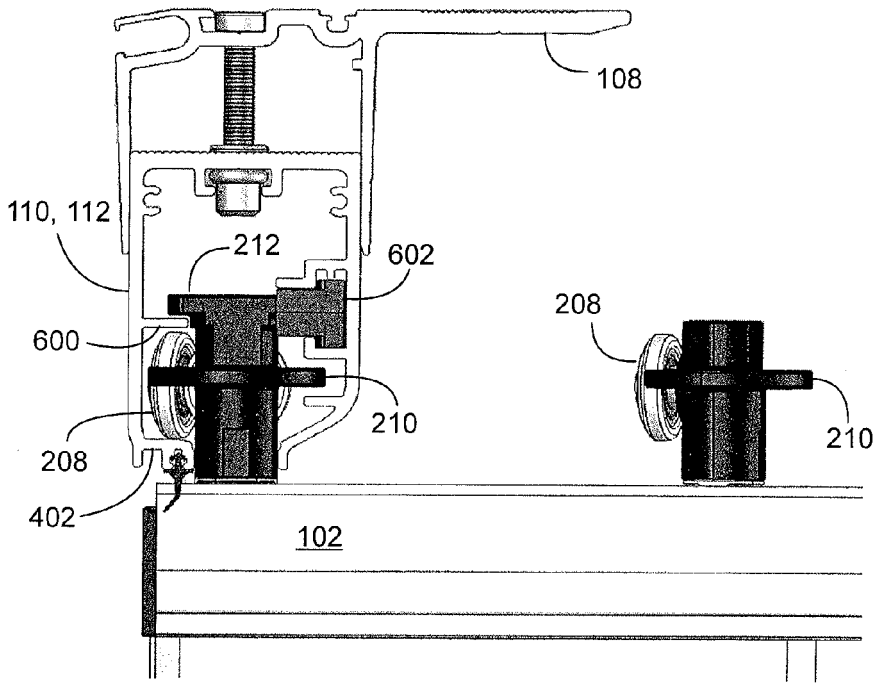
108
110, 112
212
602
208
600
210
208
210
402
102

FIG. 6

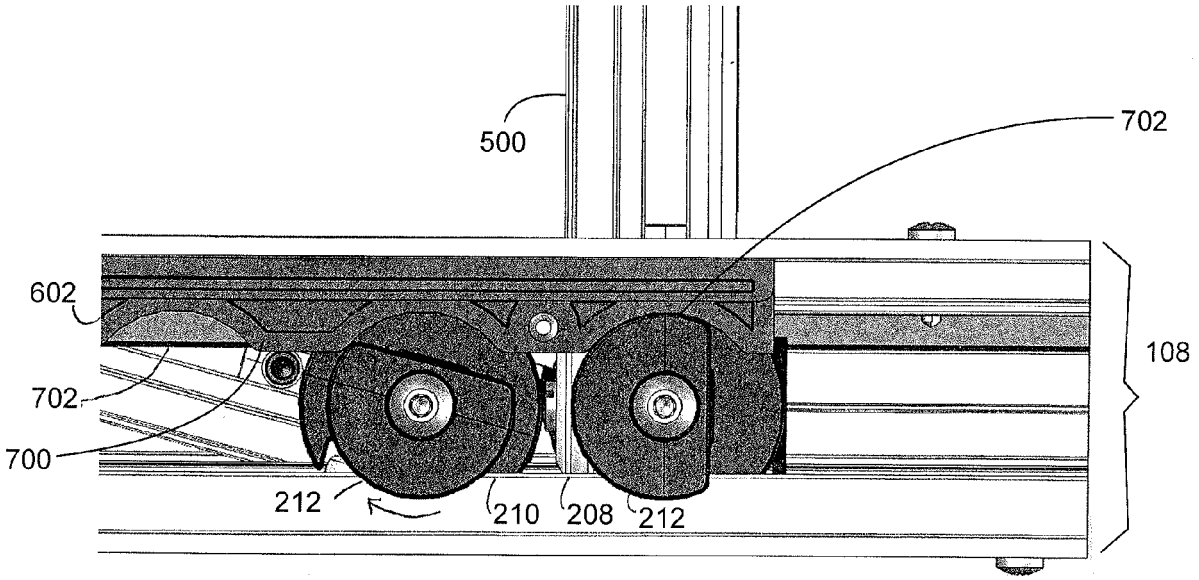
500
702
602
108
702
700
212
210
208
212

FIG. 7

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EUROPEAN SEARCH REPORT

Application Number
EP 12 16 5608

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TECHNICAL FIELDS SEARCHED (IPC)

E05D

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	10 September 2012	Van Kessel, Jeroen

CATEGORY OF CITED DOCUMENTS

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