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## (54) A screening arrangement including a fitting for fixation, and method of mounting such a screening arrangement

(57) The screening arrangement (1) has a top element (4), a bottom element (7) and a screening body (6). A parallel guidance cord system comprising two cords is provided. In a supply condition of the screening arrangement, at least one fitting (10) is releasably connected with the top element (4) and the bottom element (7). Each fitting (10) has means (5120) for providing a predefined distance in the first longitudinal direction to the end of the top element. The fitting or fittings (10) assist(s) in keeping the bottom element (7) steady at the predefined distance. This makes it possible to facilitate the mounting procedure.

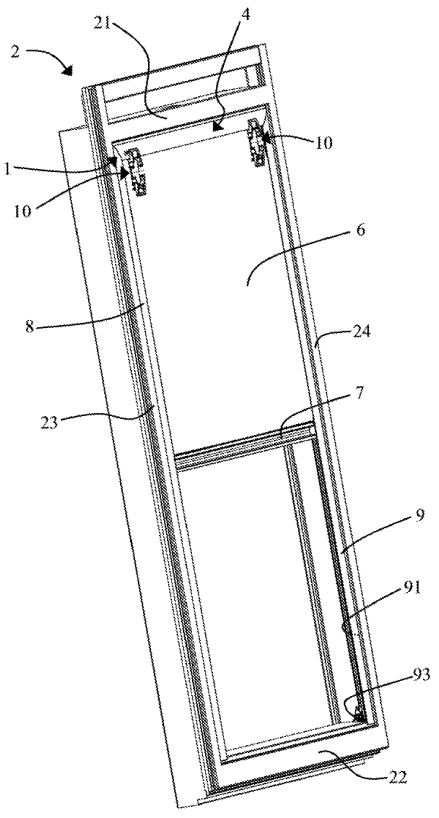


Fig. 6

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## Description

**[0001]** The present invention relates to a screening arrangement having a supply condition and a condition of use, comprising: a top element including a top rail extending in a first longitudinal direction defining, in the condition of use, a width direction, said first longitudinal direction being substantially perpendicular to a second longitudinal direction, a bottom element, a screening body, said screening body including a first end edge and a second end edge, said first end edge being accommodated in the top element and the second end edge fastened to the bottom element, and two side rails, each side rail extending, in the condition of use, in the second longitudinal direction defining a height direction.

**[0002]** Such screening arrangements are retailed through a variety of channels including DIY stores. Thus, the screening arrangement most often arrives at a customer in the supply condition and, traditionally, the consumer himself carries out the installation or mounting to bring the screening arrangement from the supply condition to the condition of use. In particular, the customer or another person mounting the screening arrangement may experience difficulties when mounting the side rails. Other factors resulting in incorrect mounting include that the bottom element is not properly introduced into the side rails, whereby it is not possible to obtain correct guiding of the bottom elements in the side rails, leading in turn to problems during operation.

**[0003]** Furthermore, in the case the screening arrangement includes a parallel guidance cord system, the cords may complicate the mounting procedure.

**[0004]** In order to assure that the screening arrangement is installed correctly in the opening to be screened, a number of precautions has been taken. Examples of prior art arrangements setting out to facilitate the mounting procedure are known from for instance Applicant's European patent No. 960 253.

**[0005]** It is an object of the invention to provide a screening arrangement in which the mounting procedure is facilitated even further.

**[0006]** It is a further object of the invention to display of the screening body may be achieved in a simple and reliable manner.

**[0007]** These and further objects are met by a screening arrangement of the kind mentioned in the introduction, which is furthermore characterized in that in said supply condition, at least one fitting is releasably connected with the top element and the bottom element to provide a predefined distance in the second longitudinal direction between the bottom element and the top element, that the bottom element comprises side guidance means, and that the screening arrangement furthermore includes a set of angular brackets, each angular bracket having a first leg being accommodated in reception means in the back side of the top rail, and each angular bracket having a second leg cooperating with the side guidance means of the bottom element in the supply condition.

**[0008]** This provides for a simplified mounting, as the consumer will be able to connect the top element to the frame to be screened and subsequently joining the side rails to the top rail of the top element. The fitting keeps the bottom element stationary at a predefined or predetermined distance from the top element, thus reducing the risk of incorrect mounting. As the angular brackets cooperate with the side guidance means of the bottom element, the step of mounting the side rails is facilitated even further.. Following installation, the fitting or fittings is/are easily removed from the top and bottom elements. The term "releasably connected" is to be interpreted as including any connection between the fitting and the top element and bottom element, respectively, involving a distance keeping function between the top element and the bottom element. The connection may involve any kind of contact or other cooperation between the fitting and the top element and bottom element, respectively, which fulfils this function. Hence, in case of for instance roller blind, in which the bottom element is biased against the top element, the fitting or fitting need(s) only to be positively secured to one of the top and bottom elements. The releasable connection between the fitting or fittings and the other element may then for instance be performed by a fitting part that abuts on the other element. Furthermore, the term should be interpreted as including any connection that is possible to release without damage to at least the elements of the screening arrangement. Furthermore, the predetermined distance defined by the connection between the fitting or fittings and the top element and the bottom element, respectively, makes it possible for the potential buyer to easily determine the nature of the screening body.

**[0009]** In one embodiment of the invention, the side guidance means comprise a side guidance element connected to each longitudinal end of the bottom element. By providing the means for side guidance on separate elements to be connected to the bottom element, these elements may be adapted to the particular purpose without affecting other parts of the bottom element.

**[0010]** In an embodiment, by which the mounting is particularly facilitated, each guidance element is located on the back side of the respective angular bracket with a slight overlap in the second longitudinal direction between the lower edge of the angular bracket and the upper edge of the side guidance element.

**[0011]** Alternatively or additionally, there is alignment between the angular bracket and the side guidance element in the first longitudinal direction. Combined with an overlap also in the second longitudinal direction, the mounting is made particularly secure, as the risk of non-correct mounting is almost eliminated. That is, it is made certain in a simple manner that the side rails are mounted correctly on the angular brackets such that the top rail and the respective side rail abut correctly on each other to obtain an inconspicuous joint. Simultaneously, the bottom element is inserted correctly into the side rails.

**[0012]** Further details are described, and further advantages stated, in the description of particular embodiments of the invention.

**[0013]** In another aspect of the invention, a method of mounting a screening arrangement is provided. The method comprises the steps of providing a top element with a top rail, a bottom element wigh side guidance means and a screening body, providing the top element with two angular brackets connected to the top rail, providing two side rails, bringing the screening arrangement to a supply condition by connecting at least one fitting releasably with the top element and the bottom element to provide a predefined distance between the bottom element and the top element, and bringing the screening arrangement from said supply condition to a condition of use.

**[0014]** In the following the invention will be described in further detail by means of examples of embodiments with reference to the schematic drawings, in which

Fig. 1 is a perspective view of a screening arrangement in an embodiment of the invention;

Fig. 2 shows, on a larger scale, a perspective view of an embodiment of a fitting for use in the screening arrangement according to the invention;

Figs 3 to 5 show, on a larger scale, perspective views of details of the fitting in the embodiment shown in Fig. 2;

Fig. 6 is a perspective view of a window provided with a screening arrangement in an embodiment of the invention;

Figs 7a and 7b show perspective views of a screening arrangement in another embodiment of the invention;

Fig. 8 shows, on a larger scale, a perspective view of details of the embodiment of the screening arrangement shown in Figs 7a and 7b;

Figs 9 to 11 show, on a larger scale, perspective views of the details shown in Fig. 8;

Fig. 12 shows a perspective view of a screening arrangement in a further embodiment of the invention;

Fig. 13 and 14 show, on a larger scale, perspective views of details of the further embodiment of the screening arrangement shown in Fig. 12;

Figs 15 and 16 show a front view and a side view, respectively, on a slightly larger scale of the screening arrangement of Fig. 1.; and

Fig. 17 and 18 show, on a larger scale, partial perspective views of a screening arrangement detail in the condition of use.

**[0015]** Figs 1 and 6 show an embodiment of a screening arrangement generally designated 1. As shown in Fig. 6, the screening arrangement is adapted to be mounted on a frame constituted by a sash 2 representing a window. The sash 2, in turn, is adapted to be connected with a stationary frame (not shown), which in a mounted position of the window lines an opening in a building. It is noted that the term "frame" is to be understood as incorporating any substantially rectangular structure positioned in any opening in a building, whether in a wall or the roof, and surrounding an aperture to be screened. Although the sash shown in Fig. 6 is the sash of a roof window and the screening arrangement 1 is mounted on the sash 2 of the window, a screening arrangement according to the invention may just as well be mounted on the stationary frame instead of the sash and may also be utilized in connection with e.g. windows having a frame only, or in doors. The sash 2 has a top piece 21, a bottom piece 22 and two side pieces 23 and 24 surrounding an aperture, which is covered by a suitable panel element such as a glazing in the form of an insulating pane (not shown).

**[0016]** A full description of a screening arrangement of this kind is found in Applicant's co-pending international application No. PCT/DK2007/050049, the contents of which are incorporated herein by reference. However, aspects relating to the present invention will be described in full detail below.

**[0017]** In the embodiment shown, the screening arrangement 1 comprises a top element 4 adapted to be positioned at the sash top piece 21, a screening body 6 and a bottom element 7. At its upper end edge, the screening body 6 is accommodated in the top element 4 and its opposed, lower end edge is fastened to the bottom element 7. In the embodiment shown, the bottom element 7 is adapted to act as a handle during operation of the screening arrangement 1, i.e. when moving the bottom element 7 and hence the screening body 6 between the non-screening position and a screening position, in which the screening body 6 covers the sash aperture partly or fully. However, instead of being manually operated, the screening arrangement may be operated by other means, e.g. by electrical operating means.

**[0018]** From Fig. 1 it may be seen that the top element 4 has a left-hand end piece 410 and a right-hand end piece (not shown). The terms "left-hand" and "right-hand" refer to the orientation shown in for instance Figs 1 and 6 and are utilized for reasons of convenience only. Similarly, the terms "front" and "back" are utilized to denote the sides of the screening arrangement, "front" being the side intended to face inwards into the room of the building, and "back" the outwards facing side. A number of further functions may be built into the end pieces, however, they will not be described in further detail in the present application. One of the most important of these functions is that the end piece 410 comprises portions constituting coupling means for cooperation with bracket members positioned on the side piece 23 of the window sash 2.

**[0019]** The top element 4 comprises a cover 430 extending almost throughout the entire length of the top element 4 from the left-hand end piece 410 to the right-hand end piece, the end pieces thus constituting the end faces of the top element 4. At the side intended to face inwards into the room, i.e. the front side, the cover 430

is connected to a top rail 440. The top rail 440 defines a first longitudinal direction, which in the condition of use corresponds to the width direction of the frame to be screened. In the embodiment shown, the connection between the top rail 440 and the remaining portion of the top element, i.e. the cover 430 is made integral, e.g. by extruding the top element as a profile including the cover 430 as well as the top rail 440. The end piece 410 is fastened to the cover 430 by means of e.g. a screw. The top rail 440 has a slightly longer extension in the longitudinal direction than the cover portion 430. In the present embodiment, the top element 4 accommodates a guide bar and a roller bar (not visible). The screening body 6 is fastened to the roller bar along its upper end edge in any suitable manner known *per se.* The guide bar guides the screening body 6 onto the roller bar, which serves to collect and store the screening body 6 in the non-screening and partially screened positions of the screening arrangement, or even in the fully screened position, in case the screening body contains surplus material. The screening body is wound in mutually opposite directions on the roller bar and the guide bar. As a consequence, the side of the screening body 6 facing inwards in the screening positions, i.e. the front side facing towards the room in the position of use of the screening arrangement, faces inwards when stored on the roller bar and, hence, the back side faces outwards on the roller bar.

**[0020]** The bottom element 7 has a general U-shape, the legs of the U extending integrally into the top and bottom edges 71 and 72, respectively, a finger grip 73 being provided by said U-shape. In the embodiment shown, it is possible to obtain a non-screening position, in which the U-shape is situated immediately below the guide bar and immediately in front of the front portion of the screening body 6 stored on the roller bar. Hence, a slight overlap between the lower edge of the top rail 440 and the top edge 71 occurs, for instance in the interval 1-10 mm. The ends of the bottom element 7 are advantageously guided in the side rails as well, preferably by means of side guidance elements 700 to be described in further detail below.

**[0021]** In the mounted position of the screening arrangement, cf. Fig. 6 showing an intermediate mounted position, the top rail 440 is joined to side rails 8, 9 in joints by means of angular brackets 85. To that end the top rail 440 has two ends, which in the embodiment shown are mitred, and of which one mitred end 445 is indicated in Fig. 1 to be joined to a respective mitred end of the side rails. In the condition of use of the screening arrangement 1, opposite ends of the bottom element 7 and opposite side edges of the screening body 6 are guided in these side rails 8 and 9. In the embodiment shown, the screening arrangement comprises a roller blind having as its screening body 6 a cloth or fabric, and of which the top element 4 includes a spring-biased roller bar. However, other screening arrangements having other kinds of screening bodies and other configurations of the top element are conceivable as well. The side edges of the screening body 6 are guided in the side rails 8, 9 in a manner known *per se*, for instance by means of a number of guide beads mounted at a distance from each other along each side edge. Hence, the side rails 8, 9 serve the purpose of improving the light-proofing properties of the screening arrangement, as they overlap the side edges of the screening body in the mounted position of the screening arrangement. Eventually, depending on the type of screening body and the installation situation, the side rails may contribute to holding the screening body in position. The bottom edge of the screening body 6 is connected with the bottom element 7 in any suitable manner, and the ends of the bottom element 7 are guided in the side rails as well, by means of side guidance element 700.

**[0022]** Eventually, the screening arrangement comprises a parallel guidance cord system comprising two cords, of which one cord 91 (cf. Fig. 6) being adapted to extend from the right-hand lower corner of the sash, up through or along the bottom element 7 and further up to the top element 4. The other cord 92 (cf. Figs 17 and 18) is routed in a mirror-inverted manner. At the top element 4, each cord is connected with a respective pre-tensioning device adapted to be connected with the top element 4 in a track and/or to press against the top cover portion of the cover 430. The pre-tensioning devices entail that the cords are held at a suitable tension all of the time, thereby ensuring that the bottom element 7 is at all times kept substantially in parallel with the top and bottom pieces 21, 22 of the sash 2 during operation of the screening arrangement. In the mounted position, the cords are hidden behind the side rails.

**[0023]** In Fig. 1 the screening arrangement 1 is shown in a supply condition attained at the manufacturer and indicating the condition or state, in which the screening arrangement is supplied and delivered. In the supply condition, a set of angular brackets 85 is connected to the top rail 440 of the top element 4. This operation is advantageously carried out by a suitable tool to secure that the angular brackets assume correct positions. The bottom element 7 is fixed in a predetermined distance from the top element 4 by means of two fittings 10 (cf. the mounted position of Fig. 6). In the embodiment shown the fittings are identical to each other, and reference will only be made to the left-hand fitting 10 in Fig. 1. The cords 91, 92 of the guidance cord system are tightened and secured in the fittings 10 as will be described further below.

**[0024]** The fitting 10 is releasably connected to the top element 4 and the bottom element 7, respectively, to define the predefined distance between the top edge 71 of the bottom element 7 and the bottom edge 444 of the top rail 440. To this end, the fitting 10 comprises means for releasable connection, in the embodiment shown carried out as snap engagement means for cooperating with the top element 4 and the bottom element 7, respectively, to provide positive engagement with the top element as well as the bottom element, The snap engagement will be

described in further detail below with reference to Figs 2 to 5. Other means for releasable connection are conceivable as well. Hence, the releasable connection means of the fitting may provide positive engagement, for instance by the described snap lock, with the bottom element only, whereas the fitting abuts on but does not engage positively with the top element. In this case, the fitting needs only to be withdrawn from the top element, possibly overcoming any friction present, without disengaging any parts of the fitting from the positive engagement. This is possible in case the bottom element is biased to move towards the top element, for instance in roller blinds. Other conceivable means for releasable connection includes the use of adhesive, interlocking elements of for instance the VELCRO® type etc.

**[0025]** The predetermined distance may for instance lie in the interval 0.5 to 10 cm, preferably 1 to 5 cm, most preferably 2 to 4 cm, and can correspond to the repeat of the pattern of the screening body 6. The chosen value depends on for instance the colour variation of the cloth of the screening body, the pattern itself and the repeat of the pattern. In the embodiment shown, the distance is approximately 2 cm. For instance, in case the range of colours available includes closely related nuances such as dark blue and black, a larger distance may be required.

**[0026]** In the embodiment shown, the fitting 10 is a two-part fitting comprising a base part 101 and an insert part 102. The insert part 102 is designed as a mainly cylindrical element, and the base part 101 has a cylindrical aperture formed by wall portions 103a and 103b protruding from a bottom portion 104 adapted to cooperate with the insert part 102. The snap engagement means of the fitting 10 adapted to cooperate with the top rail 440 of the top element are formed by a U-shaped portion 105 protruding from the wall portion 103a and a hook portion 107 protruding from the bottom portion 104. In the supply condition, the U-shaped portion 105 abuts on the front side of the top rail 440 and the hook portion 107 is clicked into a track (not shown) on the back side of the top rail 440. Correspondingly, the snap engagement means for cooperating with the bottom element 7 comprise a first portion 108 protruding from a U-shaped portion 106 and a second portion 109 protruding from the bottom portion 104 of the fitting. In the supply condition, the second portion 109 is introduced into the finger grip 73 and the first portion 108 below lower edge 72 of the bottom element 7.

**[0027]** The mainly cylindrical insert part 102 is formed by two plate portions 110 and 111 defining an annular groove 112 adapted to receive one of the cords of the cord systems. The plate portions 110 and 111 are held together by a bridge 113 defining the bottom of the groove 112. Furthermore, the bottom plate portion 111 includes a slit 114 for allowing passage of the cord. At the top plate portion 110 a throughgoing T-shaped slit 115 is shown, the T-shaped slit 115 being intended for receiving an end portion of the cord. During manufacture and assembly of the screening arrangement to provide the supply condition, the respective cord end is first accommodated in the T-shaped slit 115, following which the cord is rolled up, for instance automatically, on the insert part 102, the cord is passed through the slit 114 and the cord end is connected with the T-shaped slit 115. Subsequently, the insert part 102 with the cord is connected to the base part 101. In the embodiment shown, the indicated cord 91 for connection to the right-hand side piece 24 is connected to the right-hand fitting 10, and vice versa. In the supply condition, the plate portion 110 may be provided with a suitable removable cover, for instance carrying an advertisement in the form of a logo, a voucher or similar. Although the base portion and the insert portion have mating circular shapes and rotation of the insert part in the base part is in principle feasible, this feature is most often not used in the supply condition. Consequently, the shapes of the base part and insert part may be oval, rectangular, any other polygonal shape etc.

**[0028]** In the alternative embodiment of Figs 7 to 11, each fitting 210 includes a cover portion 2116 covering at least a part of the joint between the top rail 440 and the side rail 8. This provides for additional protection during transportation and mounting. Furthermore, the cover portion 2116 secures that the fitting 210 is held at a predefined distance from the end of the screening arrangement 1. This is advantageous in that the position of the fitting also in the first longitudinal direction is fixed. In the case the screening arrangement comprises a cord system, the cords are held tight. Furthermore, it has an aesthetical value, as the consumer will experience a harmonic appearance of the screening arrangement in the supply condition. This is particularly the case when the screening arrangement is accommodated in a package having a display window at a certain position.

**[0029]** The fitting 210 comprises a base part 2101 and an insert part 2102, the insert part 2102 being adapted for receiving a respective cord of the guidance cord system. To this end, the insert part 2102 is designed as a mainly cylindrical element having an annular groove adapted to receive the cord. As in the above embodiment, the insert part 2102 is formed by two plate portions 2110 and 2111 defining an annular groove 2112 adapted to receive one of the cords of the cord system. The plate portions 2110 and 2111 are held together by a bridge 2113 defining the bottom of the groove 2112 and forming an aperture. Furthermore, the top plate portion 2110 includes a slit 2114 for fixing the cord temporarily, and the top plate portion 2110 is provided with a T-shaped slit 2115 for receiving an end portion of the cord. Eventually, the base part 2101 has a pin 2117 adapted to cooperate with the corresponding aperture in the insert part 2102.

**[0030]** The snap engagement means of the fitting 210 adapted to cooperate with the top rail 440 of the top element are formed by a stepped portion 2105 protruding from the bottom portion 2104 and two hook portions 2107 protruding from the stepped portion 2105. In the supply condition, the stepped portion 2105 abuts on the front side of the top rail 440 and the hook portions 2107 are clicked onto the bottom edge 444 of the top rail 440. Cor-

respondingly, the snap engagement means for cooperating with the bottom element 7 comprise a portion 2108 protruding from the bottom portion 2104. In the supply condition, the protruding portion 2108 is introduced behind the upper edge 71 of the bottom element 7.

**[0031]** A special feature of this embodiment appears when comparing Fig. 7a with Fig. 7b: In Fig. 7a, the screening arrangement 1 is in its supply condition, i.e. when the consumer or a craftsman is ready to install the screening arrangement in the frame to be screened. The cover portion 2116 is located at the corner of the top rail end. As will be described in further detail below, the screening arrangement 1 is mounted on fittings on the frame by guiding the left-hand end piece 410 and the right-hand end piece over bracket members positioned on the frame, e.g. in the embodiment shown in the above at the upper ends of each sash side piece. During this movement, the cover portions 2116 are pushed outwards and into the room towards the installer. This results in the position of the cover portion 2116 shown in Fig. 7b, i.e. slightly angled with respect to the top rail 440.

**[0032]** In the further embodiment of Figs 12 to 14, a fitting 510 is releasably connected to the top element 4 and the bottom element 7 as described in the above description of fittings 10 and 210, respectively. Another fitting may be provided near the opposite longitudinal end of the screening arrangement 1. Only differences with respect to these embodiments will be described in detail. Each fitting 510 includes a cover portion 5116 covering at least a part of the joint between the top rail 440 and the side rail 8 in the mounted position. The cover portion 5116 is provided with a flange portion 5116a. This provides for additional protection during transportation and mounting. Furthermore, as in the embodiment of Figs 7-11, the position of the fitting also in the first longitudinal direction is fixed.

**[0033]** Another special feature of this further embodiment is that the fitting 510 has a protruding leg 5120 ending in a flange 5121, which in the supply condition lies behind the side guidance element 700 in abutment with the back side thereof. A further flange 5122 is provided, which in the embodiment shown abuts on the front side of the bottom element 7. This is advantageous in that the cord of the cord system (not shown in Fig. 12) may be guided from the side guidance element 700 to the fitting 510 without any risk of coming into contact with the edges of the bottom element, which could potentially damage the cord.

**[0034]** An obvious alternative to this embodiment is to have only the protruding leg 5120 to define the predetermined distance in the first longitudinal direction and thus not the cover portion 5116.

**[0035]** Referring again to Fig. 1, a further aspect of the fitting 10 will be described. The predetermined distance between the the top element 4 and the bottom element 7 in the supply condition has the further consequence that the angular bracket 85 is able to cooperate with a respective side guidance element 7000 connected to the bottom element 7. The cooperation entails providing an overlap denoted d between the second leg 860 of the angular bracket 85 and the side guidance element 700. Furthermore, the cooperation entails that the side guidance element 700 is substantially aligned with the second leg 860 of the angular bracket 85 in a direction parallel to the longitudinal direction of the side rail 8. The longitudinal direction of the side rail constitutes a second longitudinal direction and defines a height direction in the condition of use of the screening arrangement in the frame to be screened. In a rectangular frame to be screened, the first and second longitudinal directions are substantially perpendicular. As the top edge 701 of the side guidance element 700 is thus situated above and behind the lower edge of the angular bracket 85 and substantially in alignment with the angular bracket 85 in the supply condition, the side guidance element 700 is able to form part of the guide when mounting the side rail 8 onto the angular bracket 85. In the supply condition, a first leg 850 of the angular bracket 85 is inserted into a track 447 in the back side of the top rail 440 (cf. Fig. 16) . The angular bracket 85 has arresting means preventing the angular bracket 85 to be extracted from the track. The second leg 860 of the angular bracket is adapted to be inserted into a track in the back side of the side rail 8 during mounting of the screening arrangement.

**[0036]** The fitting 10 hence has at least two primary purposes:

First, it acts as a means for assisting in the mounting of the screening arrangement by keeping the cord securely and defining the overlap between the side guidance element 700 and the angular bracket 85. This facilitates the mounting, as the top element 4 may be connected with the frame without interfering with the cords as these are at all times kept tight by the fitting or fittings. Furthermore, the side guide rails may be joined properly with the top rail 440 without the risk of entangling of the cords or that the side guidance element 700 and hence the entire bottom element 7 are displaced and not introduced correctly into the side rail.

Second, it assists in displaying the nature, i.e. for instance the texture, colour and pattern, of the screening body by defining a predetermined distance between the top element 4 and the bottom element 7 in the supply condition.

**[0037]** The configuration of the side guidance element 700 and its relation to the angular bracket 85 appear more clearly from Figs 17 and 18. The overlap d between the lower edge of the angular bracket 85 and the upper edge 701 of the side guidance element 700 should of course be chosen such that a secure overlap is ensured. However, as the overlap should only provide the initial guide for the side rails when joining the side rails to the top rail, the overlap needs not be too large. Furthermore, it may be seen, in particular from the front view of Fig. 15, that

in addition to the overlap d in the second longitudinal direction, i.e. the height direction, there is alignment between the angular bracket 85 and the side guidance element 700 in the first longitudinal direction, i.e. the width direction, as well. This feature also contributes to the facilitated mounting of the screening arrangement 1. In Figs 17 and 18, the side guidance element 700 is shown in more detail. Other features visible in Figs 17 and 18 include cords 91, 92 guided through the side guidance element 700 connected to the bottom element 7, namely cord 91 through opening 702 near the upper edge 701, and cord 92 through opening 703. At the opposite end of the bottom element 7 the cords are guided reversely. A further feature of the side guidance element 700 appears from Fig. 18, viz. upstanding portion 704 which is able to at least guide the cord 92 onto the fitting 10, but could also hold the cord 92 temporarily in the supply condition of the screening arrangement 1. Possibly, the engagement between the cord 92 and the upstanding portion 704 may be supplemented by a knob (not shown). The engagement between the cord 92 and the upstanding portion 704 and possibly the knob is easily overcome when the cord 92 is released from the fitting 10 during mounting.

**[0038]** Further alternative means for holding the cords temporarily to the fitting include the use of a supplemental fitting separate from the distance keeping fitting 10; 210; 510. Such a supplemental fitting may be designed more or less exclusively for holding the cord, and may be quite simple. In principle, the cords could be attached temporarily to e.g. the bottom element by adhesion.

**[0039]** Installation of the entire screening arrangement 1 in a frame, for instance the sash 2 of Fig. 6, is carried out in the following manner:

The screening arrangement 1 is provided in its supply condition shown in Fig. 1. At the installation site, the top element 4 is connected to the frame, i.e. for example the sash 2. In the embodiment shown in the above, this is thus carried out by guiding the coupling members on the outer side of each end piece 410 over bracket members positioned at the upper ends of each sash side piece. A bracket is fastened to the each of the side pieces 23, 24, near the bottom piece 22. In Fig. 6, the bracket 93 of the right-hand side piece 24 is shown. Following this, the side rails 8, 9 are joined to the top rail 440 at the mitred ends by means of the angular brackets 85. A more detailed description of the manner of mounting the screening arrangement is disclosed in Applicant's co-pending international application No. PCT/DK2007/050047, the contents of which are incorporated herein by reference.

**[0040]** In the step of joining the side rails to the top rail, each side rail is brought from a position, in which the side rail is out of alignment with the second longitudinal direction, to a position, in which the side rails is in alignment with the second longitudinal direction, during the step of connecting the side rails to the top rail. During this step, the bottom element 7 and consequently the side guidance element 700 are kept substantially stationary by means of the fittings 10. The side guidance element 700 thus abuts slightly on the back side of the angular bracket 85. The second leg 860 of the angular bracket is thus inserted into the track in the back side of the side rail 8 while the side guidance element 700 acts as a guide to the angular bracket. All through the above operations the fittings 10 hold the bottom element 7 stationary at its predetermined distance from the top rail 440 of the top element 4, thus ensuring the overlap d between the side guidance element 700 and the angular bracket 85. The cords of the cord system are also kept tight on the fittings 10.

**[0041]** Only when the side rails 8 and 9 have been secured to their respective side piece, the insert part 102 of each fitting 10 is released from engagement with the base part 101 and the cord is let loose. This is carried out by first removing any cover member on the insert part 102, then withdrawing the end of the cord from the T-shaped slit 115. The free end of the cord is connected to the bracket 93 near the sash bottom piece. Eventually, the engagement between the fitting 10 and the bottom element 7 is released by pulling the U-shaped portion 106 to move the portions 108 and 109 out of engagement with the bottom edge 72 of the bottom element 7. The bottom element 7 may be moved and the intermediate mounted condition shown in Fig. 6 is attained. Following this, also the engagement between the fitting 10 and the top element 4 is released by moving the U-shaped portion 105 and hence the hook portion 107 out of engagement with the top rail 440 of the top element 4. Now, the screening arrangement is in its condition of use. Slight deviations of the above described mounting procedure may, of course, occur.

**[0042]** The invention should not be regarded as being limited to the described embodiments. Several modifications and combinations of the different embodiments will be apparent to the person skilled in the art.

**[0043]** In a still further aspect of the invention, the following is provided:

**[0044]** A screening arrangement (1) comprising:

a top element (4),
a bottom element (7),
a screening body (6), said screening body including a first end edge and a second end edge, said first end edge being accommodated in the top element and the second end edge fastened to the bottom element, and
a parallel guidance cord system comprising at least two cords (91),
the screening arrangement having a supply condition and a condition of use,
whereby
in said supply condition, at least one fitting (10;210)

is releasably connected with the top element (4) and the bottom element (7) to provide a predefined distance between the bottom element (7) and the top element (4), and that said fitting (10;210) includes means for receiving at least one of said cords.

**[0045]** This provides for a simplified mounting, as the consumer will be able to connect the top element to the frame to be screened without the risk of entangling the cords. Furthermore, the predetermined distance defined by the engagement between the fitting or fittings and the top element and the bottom element, respectively, makes it possible for the potential buyer to easily determine the nature of the screening body.

**[0046]** The mounting may be carried out as follows:

**[0047]** A method of mounting a screening arrangement, comprising the steps of

providing a top element, a bottom element and a screening body,
connecting a parallel guidance cord system comprising at least two cords to the top element and the bottom element,
bringing the screening arrangement to a supply condition by connecting at least one fitting releasably with the top element and the bottom element to provide a predefined distance between the bottom element and the top element, and securing said cords to the fittings,
bringing the screening arrangement from said supply condition to a condition of use.

**[0048]** In the method of the above, the step of bringing the screening arrangement from said supply condition may include:

connecting the top element to a frame,
removing the cords from said at least one fitting,
releasing the engagement between each fitting and the bottom element,
releasing the engagement between each fitting and the top element.

**[0049]** In a further development of the method of the above, the screening arrangement may be provided with two side rails and whereby the method comprises the further step of connecting the side rails to the frame before the step of removing the cords from said at least one fitting.

**[0050]** In the following, further embodiments of the invention are set forth:

**[0051]** Embodiment 1. A screening arrangement (1) having a supply condition and a condition of use, comprising:

a top element (4) including a top rail (440) extending in a first longitudinal direction defining, in the condition of use, a width direction, said first longitudinal direction being substantially perpendicular to a second longitudinal direction,
a bottom element (7),
a screening body (6), said screening body including a first end edge and a second end edge, said first end edge being accommodated in the top element and the second end edge fastened to the bottom element, and
two side rails (8, 9), each side rail extending, in the condition of use, in the second longitudinal direction defining a height direction,
**characterized** in that
in said supply condition, at least one fitting (10;210; 510) is releasably connected with the top element (4) and the bottom element (7) to provide a predefined distance in the second longitudinal direction between the bottom element (7) and the top element (4), that the bottom element (7) comprises side guidance means, and that the screening arrangement furthermore includes a set of angular brackets (85), each angular bracket having a first leg (850) being accommodated in reception means in the back side of the top rail (440), and each angular bracket having a second leg (860) cooperating with the side guidance means of the bottom element (7) in the supply condition.

**[0052]** Embodiment 2. A screening arrangement according to Embodiment 1, wherein said side guidance means comprise a side guidance element (700) connected to each longitudinal end of the bottom element (7).

**[0053]** Embodiment 3. A screening arrangement according to Embodiment 2, wherein each side guidance element (700) is located on the back side of the respective angular bracket (85) with a slight overlap (d) in the second longitudinal direction between the lower edge of the second leg (860) of the angular bracket and the upper edge of the side guidance element (700).

**[0054]** Embodiment 4. A screening arrangement according to Embodiment 2 or 3, wherein there is alignment between the second leg (860) of the angular bracket (85) and the side guidance element (700) in the first longitudinal direction.

**[0055]** Embodiment 5. A screening arrangement according to any one of the preceding Embodiments, wherein said at least one fitting (10;210;510) comprises a base part (101;2101) and an insert part (102;2102).

**[0056]** Embodiment 6. A screening arrangement according to Embodiment 5, wherein said insert part (102; 2102) is adapted for receiving said at least one cord (91).

**[0057]** Embodiment 7. A screening arrangement according to Embodiment 6, wherein the insert part (102; 2102) is designed as a mainly cylindrical element having an annular groove (112;2112) adapted to receive the cord (91).

**[0058]** Embodiment 8. A screening arrangement according to any one of Embodiments 5 to 7, wherein the insert part (102;2102) is provided with an aperture (115;

2115) for receiving an end portion of the cord.

**[0059]** Embodiment 9. A screening arrangement according to any one of Embodiments 5 to 8, wherein the base part (101) has a cylindrical aperture adapted to cooperate with the insert part (102).

**[0060]** Embodiment 10. A screening arrangement according to any one of Embodiments 5 to 9, wherein the base part (2101) has a pin (2117) adapted to cooperate with a corresponding aperture in the insert part (2102).

**[0061]** Embodiment 11. A screening arrangement according to any one of the preceding Embodiments, wherein each fitting (210;510) has means (2116; 5120) for providing a predefined distance in the first longitudinal direction to the end of the top element.

**[0062]** Embodiment 12. A screening arrangement according to any one of the preceding Embodiments, wherein each of said side rails (8, 9) having a first end and second end, the second end of each side rail (8, 9) being adapted to be joined to a first and second end, respectively, of, said top rail (440).

**[0063]** Embodiment 13. A screening arrangement according to Embodiment 11 and 12, wherein each fitting (210;510) includes a portion (2116;5116) covering at least the end of the top rail in the supply condition.

**[0064]** Embodiment 14. A screening arrangement according to any one of the preceding Embodiments, wherein each fitting (10;210) comprises snap engagement means for connection to the top element (4) and/or the bottom element (7), respectively.

**[0065]** Embodiment 15. A screening arrangement according to any one of the preceding Embodiments, wherein the top element (4) has a top rail (440) and the bottom element (7) has a top edge (71) and a bottom edge (72), a finger grip (73) being defined between the top and bottom edges (71, 72), said bottom element being movable manually in said condition of use between a non-screening position, in which the top edge (71) of the bottom element (7) is located close to the top element, and a screening position, in which the top edge is located at a distance from the top element for screening an aperture of a frame, the predefined distance being determined between the top edge (71) of the bottom element (7) and a bottom edge of the top rail (440).

**[0066]** Embodiment 16. A screening arrangement according to Embodiment 15, wherein said predetermined distance lies in the interval 0.5 to 10 cm, preferably 1 to 5 cm, most preferably 2 to 4 cm.

**[0067]** Embodiment 17. A screening arrangement according to Embodiment 15 or 16, wherein said predetermined distance corresponds to the repeat of the pattern of the screening body (6).

**[0068]** Embodiment 18. A screening arrangement according to any one of the preceding Embodiments, wherein two fittings (10;210) are releasably connected with the top element (4) and the bottom element (7).

**[0069]** Embodiment 19. A method of mounting a screening arrangement, comprising the steps of

providing a top element with a top rail, a bottom element wigh side guidance means and a screening body,
providing the top element with two angular brackets connected to the top rail,
providing two side rails,
bringing the screening arrangement to a supply condition by connecting at least one fitting releasably with the top element and the bottom element to provide a predefined distance between the bottom element and the top element, and
bringing the screening arrangement from said supply condition to a condition of use.

**[0070]** Embodiment 20. The method of Embodiment 19, whereby the step of bringing the screening arrangement from said supply condition includes:

connecting the top element to a frame,
connecting the side rails to the top rail,
connecting the side rails to the frame,
releasing the engagement between each fitting and the bottom element,
releasing the engagement between each fitting and the top element.

**[0071]** Embodiment 21. The Embodiment of claim 19 or 20, whereby each fitting is provided with a portion (2116;5116) covering at least a part of the end of the top rail in the supply condition, and whereby said fitting is (2116;5116) is released from the top element during the step of connecting the top element to a frame.

## Claims

**1.** A screening arrangement (1) having a supply condition and a condition of use, comprising:

a top element (4) including a top rail (440) extending in a first longitudinal direction defining, in the condition of use, a width direction, said first longitudinal direction being substantially perpendicular to a second longitudinal direction,
a bottom element (7),
a screening body (6), said screening body including a first end edge and a second end edge, said first end edge being accommodated in the top element and the second end edge fastened to the bottom element, and
two side rails (8, 9), each side rail extending, in the condition of use, in the second longitudinal direction defining a height direction,
**characterized in that**
in said supply condition, at least one fitting (10; 210;510) is releasably connected with the top element (4) and the bottom element (7), and that each fitting (510) has means (5120) for providing

a predefined distance in the first longitudinal direction to the end of the top element.

**2.** A screening arrangement (1) according to claim 1, wherein said means for providing a predefined distance in the first longitudinal direction to the end of the top element comprises a protruding leg (5120).

**3.** A screening arrangement (1) according to claim 2, wherein said protruding leg (5120) ends in a flange (5121) and a further flange (5122).

**4.** A screening arrangement (1) according to any one of the preceding claims, wherein each fitting furthermore has means to provide a predefined distance in the second longitudinal direction between the bottom element (7) and the top element (4).

**5.** A screening arrangement according to claim any one of the preceding claims, wherein said at least one fitting (10;210;510) comprises a base part (101; 2101) and an insert part (102;2102).

**6.** A screening arrangement according to claim 5, wherein said insert part (102;2102) is adapted for receiving said at least one cord (91), preferably designed as a mainly cylindrical element having an annular groove (112;2112) adapted to receive the cord (91).

**7.** A screening arrangement according to any one of claims 5 to 6, wherein the insert part (102;2102) is provided with an aperture (115;2115) for receiving an end portion of the cord.

**8.** A screening arrangement according to any one of claims 5 to 7, wherein the base part (101) has a cylindrical aperture adapted to cooperate with the insert part (102).

**9.** A screening arrangement according to any one of claims 5 to 8, wherein the base part (2101) has a pin (2117) adapted to cooperate with a corresponding aperture in the insert part (2102).

**10.** A screening arrangement according to any one of the preceding claims, wherein each of said side rails (8, 9) having a first end and second end, the second end of each side rail (8, 9) being adapted to be joined to a first and second end, respectively, of, said top rail (440).

**11.** A screening arrangement according to any one of the preceding claims, wherein each fitting (10;210) comprises snap engagement means for connection to the top element (4) and/or the bottom element (7), respectively.

**12.** A screening arrangement according to any one of the preceding claims, wherein two fittings (10;210) are releasably connected with the top element (4) and the bottom element (7).

**13.** A method of mounting a screening arrangement, comprising the steps of
providing a top element with a top rail, a bottom element wigh side guidance means and a screening body,
providing the top element with two angular brackets connected to the top rail,
providing two side rails,
bringing the screening arrangement to a supply condition by connecting at least one fitting releasably with the top element and the bottom element, and
bringing the screening arrangement from said supply condition to a condition of use.

**14.** The method of claim 13, whereby the step of bringing the screening arrangement from said supply condition includes:

connecting the top element to a frame,
connecting the side rails to the top rail,
connecting the side rails to the frame,
releasing the engagement between each fitting and the bottom element,
releasing the engagement between each fitting and the top element.

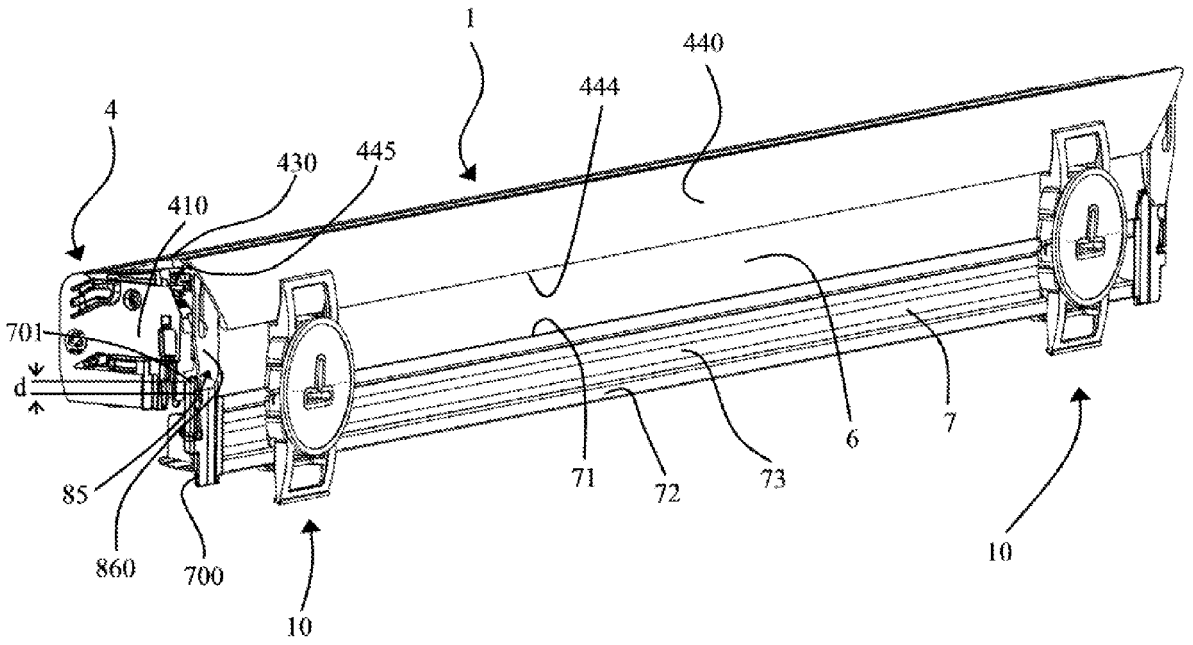


Fig. 1

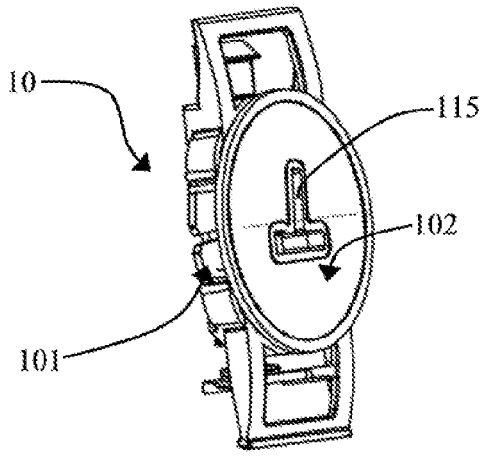


Fig. 2

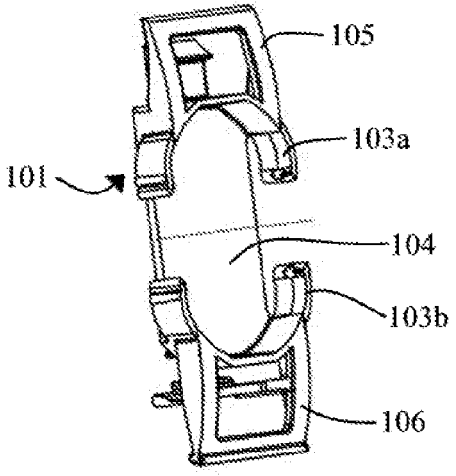


Fig. 3

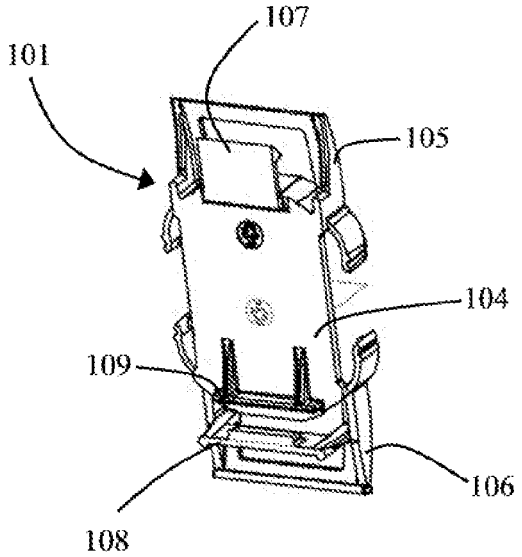


Fig. 4

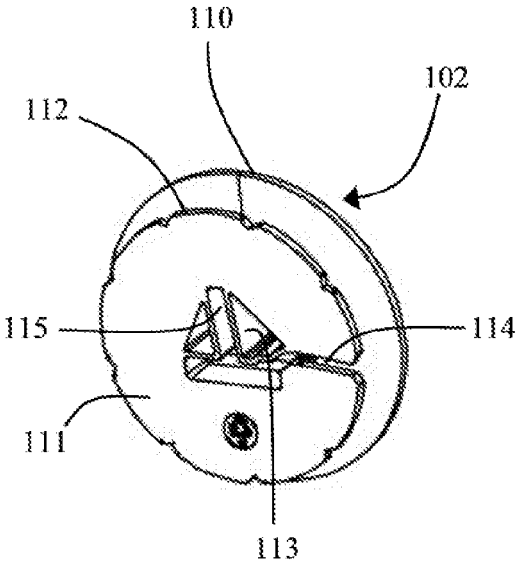


Fig. 5

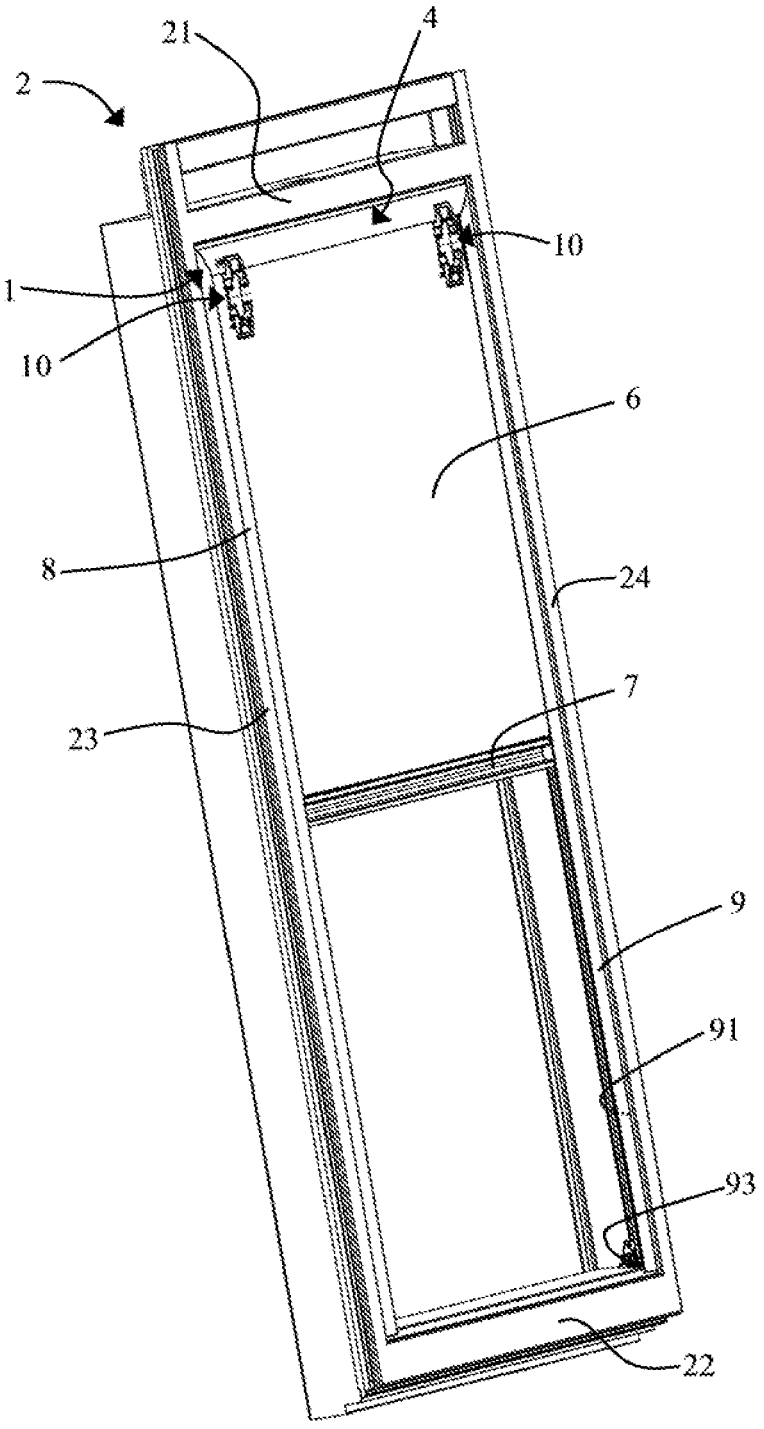


Fig. 6

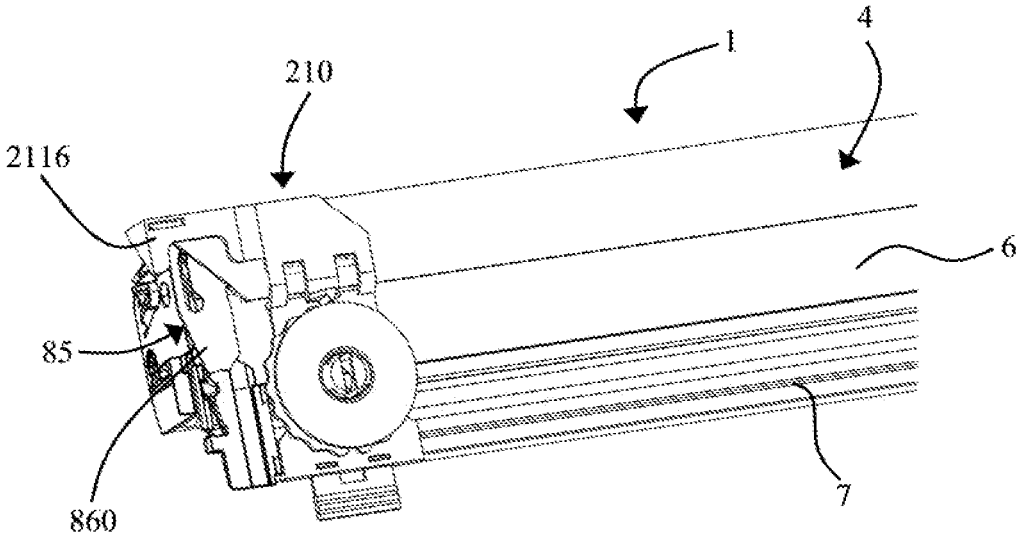


Fig. 7a

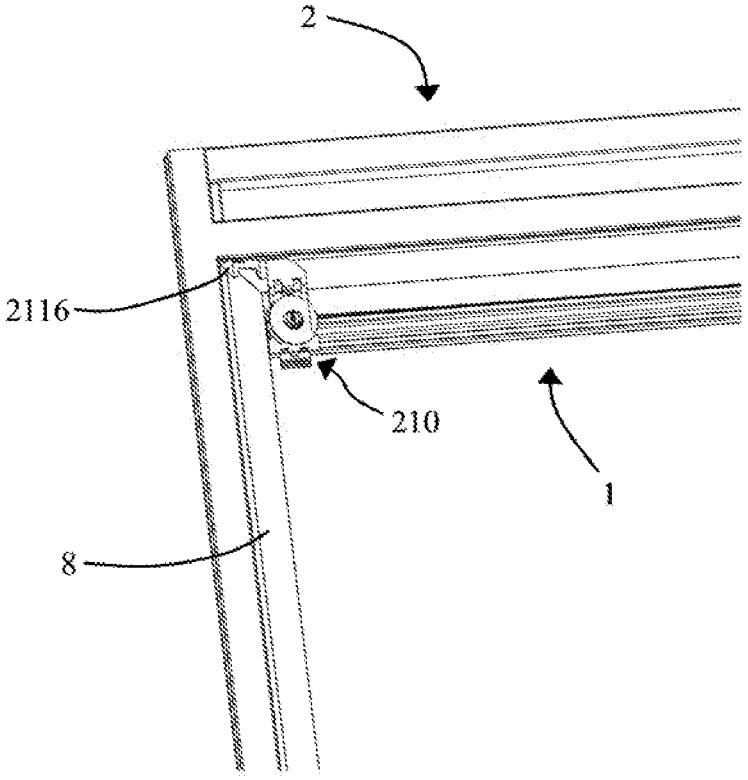


Fig. 7b

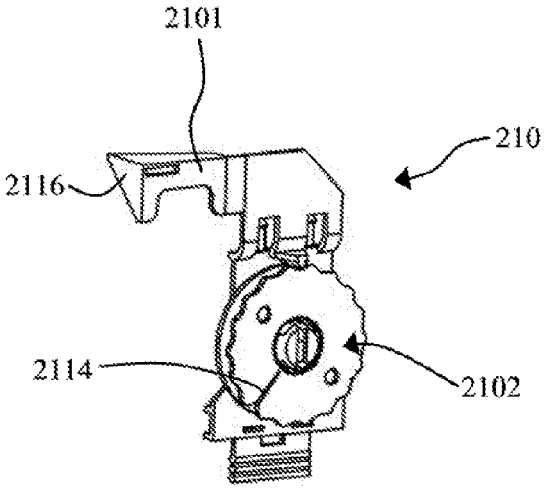


Fig. 8

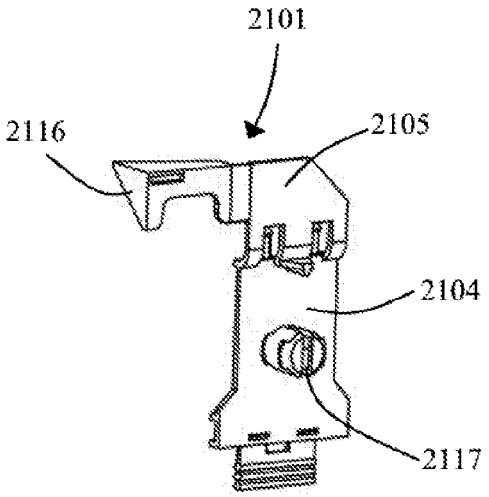


Fig. 9

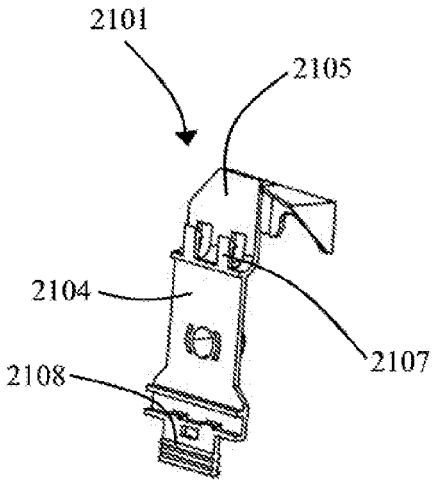


Fig. 10

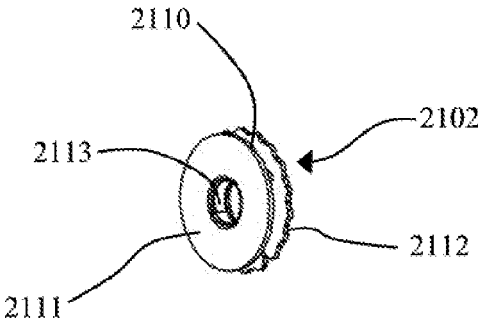


Fig. 11

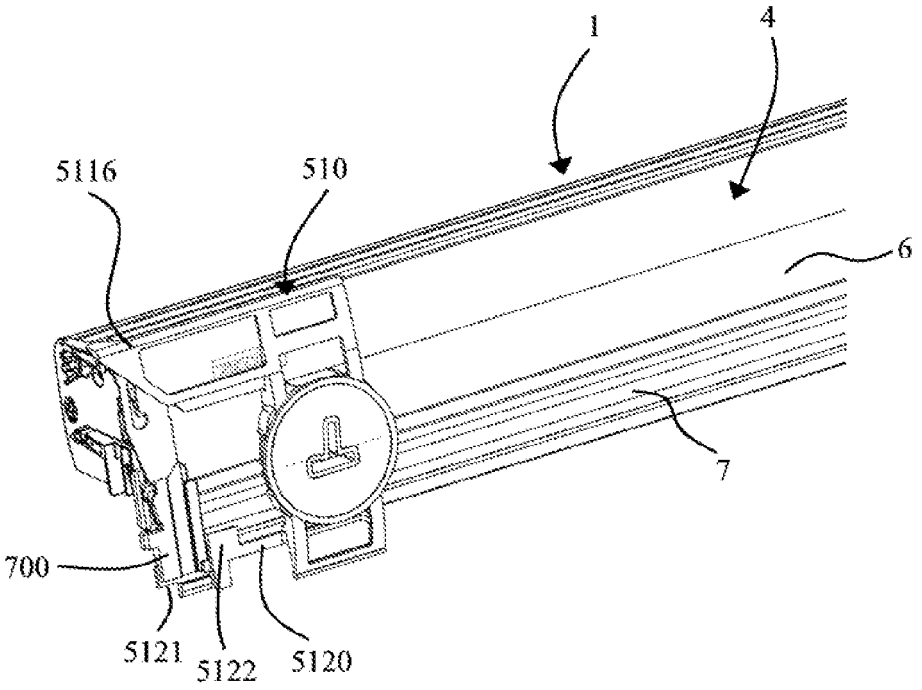


Fig. 12

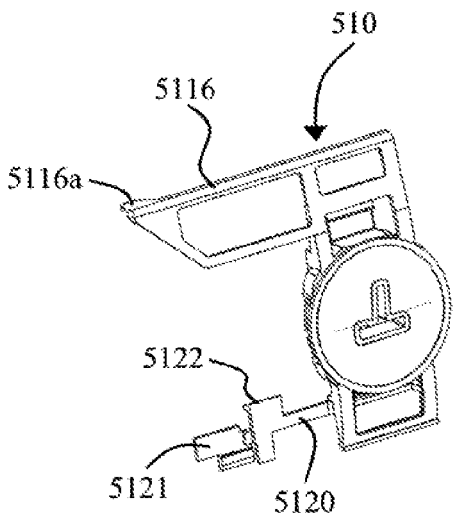


Fig. 13

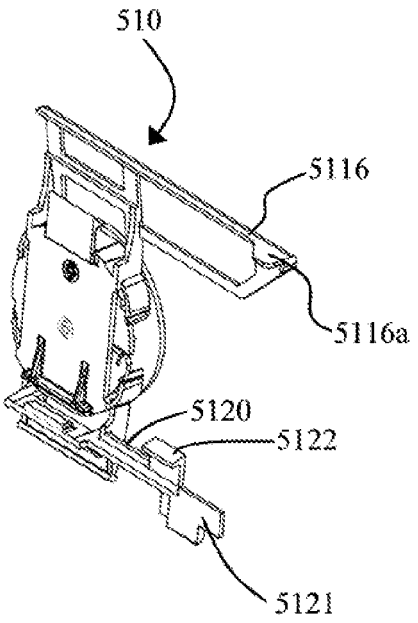


Fig. 14

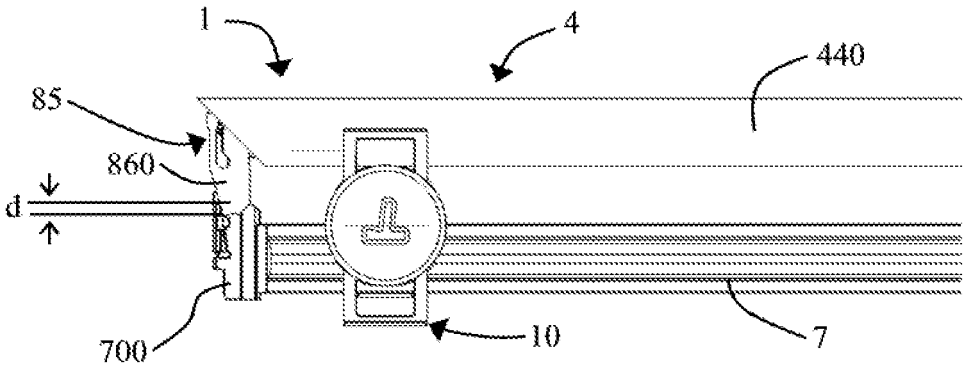


Fig. 15

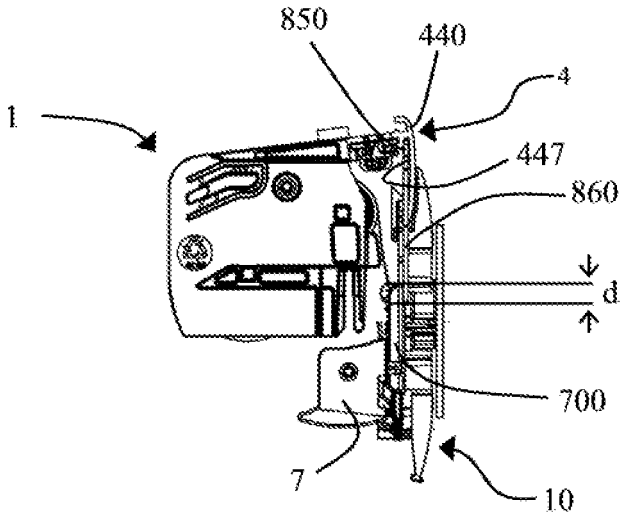


Fig. 16

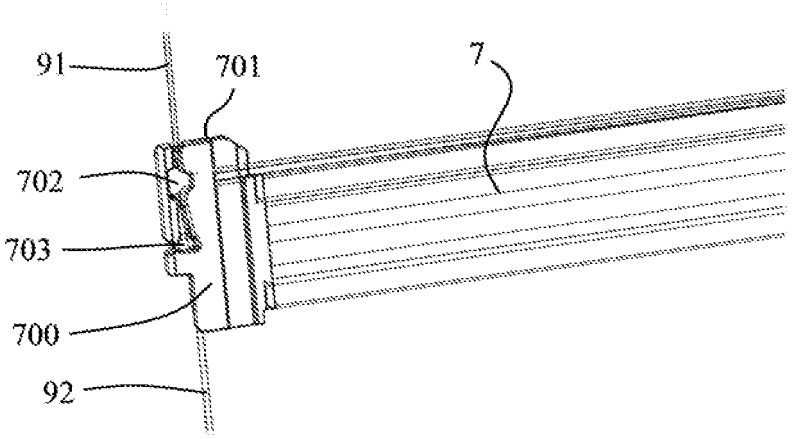


Fig. 17

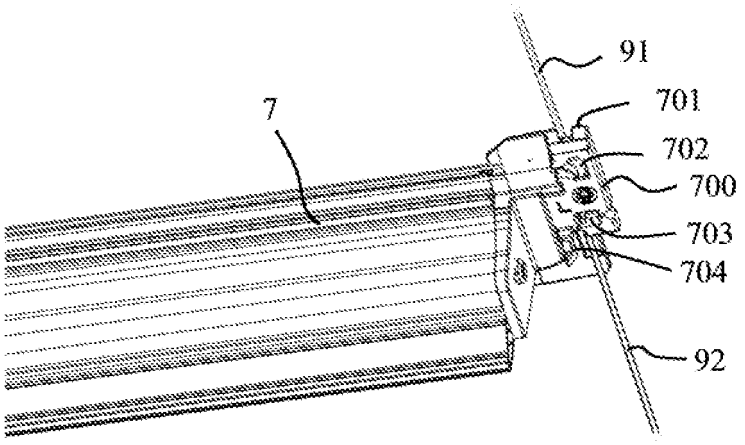


Fig. 18

## REFERENCES CITED IN THE DESCRIPTION

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### Patent documents cited in the description


- EP 960253 A **[0004]**
- DK 2007050049 W **[0016]**
- DK 2007050047 W **[0039]**