



(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
01.02.2017 Bulletin 2017/05

(51) Int Cl.:
E06B 9/52 (2006.01) E06B 9/262 (2006.01)

(21) Application number: **16181940.4**

(22) Date of filing: **29.07.2016**

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR
Designated Extension States:
BA ME
Designated Validation States:
MA MD

(71) Applicant: **B.V. Aluminium Verkoop Zuid (A.V.Z.)**
5683 CR Best (NL)

(72) Inventor: **Terhoeve, Marinus Henricus**
5683 CR Best (NL)

(74) Representative: **V.O.**
P.O. Box 87930
Carnegieplein 5
2508 DH Den Haag (NL)

(30) Priority: **30.07.2015 NL 2015241**

(54) **PLEATED INSECT SCREEN DEVICE AND METHOD OF MOUNTING THEREOF**

(57) A pleated screen device (100) and method for mounting. The screen device (100) comprises a side frame (11) with a first mounting profile (B1). Fastenings (31) comprise a second mounting profile (B2) that is complementary with the first mounting profile (B1). The screen device (100) comprises a modular corner piece (21) with a third mounting profile (B3) on a first corner side (21a) that is complementary to the first mounting profile (B1) for cooperation with said first mounting profile

(B1) for mounting of the first corner piece (21) on the side frame (11). The corner piece (21) comprises a second corner side (21c) transverse to the first corner side (21a), which second corner side that comprises, on an outside of the first corner piece (21), a fourth mounting profile (B4) that is complementary to a mounting profile (B2) of fastenings (31) for mounting of the screen device (100) in front of the frame on a front side (51c) of the frame (51) transverse to the inside (50a) of the frame (51).

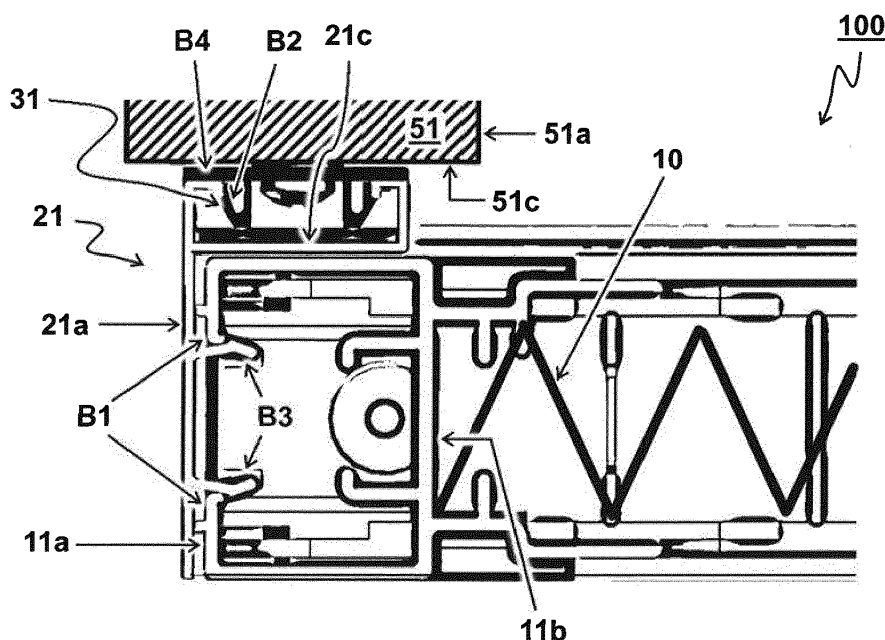


FIG 2A

Description

[0001] The invention concerns a pleated screen device such as a screen door or window, and method for mounting. The screen device comprises an insect screen for screening a door- or window opening for example against insects. In a pleated screen device the foldable insect screen is mounted between a side frame or fixed frame and a pull frame that is movable with respect to the side frame. The pull frame is for example guided in its movement by upper and lower guides for folding or unfolding of the insect screen.

[0002] Customarily, a screen device is constructed for a particular type of mounting which type can be divided in two separate categories. Pleated screen doors are mostly delivered for mounting "within the frame". The expression of mounting "within the frame" is used if the screen device has fastenings for placement on the inside of a frame, in other words within the inside of the frame. The expression of frame here refers to the periphery around an opening of a door or window, customarily a wooden or plastic frame, possibly the wall around it. The screen device for mounting "within the frame" normally has fastenings on the periphery of the side frame and the upper guide. The pleated screen for mounting "within the frame" can have as advantage that it does not take up extra space in the room where it is disposed.

[0003] However, not every frame is suitable for mounting "within the frame", for example if the frame is relatively thin, or in case of a sliding door with protruding door handle. In that case it is possible to choose for mounting of the screen device "in front of the frame", i.e. with fastenings suitable for placement of the device on or in front of the frame (possibly wall). This type of mounting is mostly applied for so-called rollable screen doors because these take up relatively little space by rolling up in stead of folding up of the insect screen. Pleated screen doors are however mostly delivered for mounting "within the frame". To still mount these "in front of the frame" in exceptional cases, it is normally required to first construct a separate frame in front of the door opening wherein this separate frame can act like a sort of substitute frame around the screen for mounting "within the frame". However, the construction of the separate frame results in extra time and costs for mounting. Moreover it can be difficult to make the extra frame at the right size. There is thus a need for an improved pleated screen device that is easily placeable and flexibly suited for different situations.

[0004] These and other needs are satisfied by a pleated screen device according to the invention. The screen device comprises an insect screen for screening a door- or window opening against insects. An outside of a side frame of the screen device has a first mounting profile for mounting of the screen device to a frame of the door- or window opening. The insect screen is mounted between an inner side of a pull frame and an inner side of the side frame opposite said outside of the side frame.

The screen device is delivered with fastenings that have a second mounting profile which is complementary to the first mounting profile for cooperation with said first mounting profile, i.e. the first mounting profile fits in the second mounting profile or vice versa to form a connection. Accordingly the pleated screen device is suitable for mounting "within the frame" of the screen device on an inside of the frame via the fastenings.

[0005] The screen device is characterized by addition of a modular corner piece. The corner piece is formed by a first corner side and a transverse second corner side. The inside of the first corner side comprises a third mounting profile that is complementary to the first mounting profile for cooperation with said first mounting profile for mounting of the first corner piece on the side frame. The outside of the second corner side comprises a fourth mounting profile that is complementary to the second mounting profile (of the fastenings). Accordingly the pleated screen device is suitable for mounting of the screen device "in front of the frame" on a front side of the frame, transverse to the inside of the frame, via the fastenings.

[0006] By addition of the modular corner piece, a screen device suitable for "within the frame" mounting can be simply mounted "in front of the frame". Because the corner piece is modular, i.e. separately detachable, the option is maintained for being able to mount the screen device both "within the frame" or "in front of the frame", depending on the situation. For the placement "in front of the frame" one only has to mount the corner piece on the side frame with the profile that would otherwise be used for mounting "within the frame" with the fastenings. Because the fastenings fit directly to the corner piece, it is no longer necessary to construct a separate frame in front of the frame or the wall. With this, the same fastenings having a profile that normally only fits in the outer periphery of the side frame, can now also be placed between the front side of the frame and the corner piece on the screen device. Accordingly an improved pleated screen device is provided that is easily placeable and flexibly available for different situations.

[0007] By the selection of complementary mounting profiles on the corner piece, the fastenings may form both a direct connection between the side frame and the fastenings on an inside of the frame, as well as an indirect connection via the corner piece between the side frame and the fastenings on the front side of the frame. With this, for example the third mounting profile on the inside of the first corner side of the corner piece may dimensionally match with the second mounting profile of the fastenings. The fourth mounting profile on the outside of the second corner side of the first corner piece may dimensionally match with the first mounting profile on the outside of the side frame.

[0008] As further adaptation the screen device preferably comprises a brush disposed on a back side of the pull frame. When this is disposed such that hairs of the brush extend substantially in a direction transverse to a

movement direction of the pull frame, the brush may close an opening between the pull frame and the frame when the insect screen is unfolded and the insect screen screens the door- or window opening. This can for example be done by addition of a second corner piece wherein the brush, that is mounted normally on the outer periphery of the pull frame in case of "within the frame" mounting, is at a transverse angle directed to the front side of the frame disposed in case of "in front of the frame" mounting. For example a second corner piece can be used with complementary mounting profiles on the transversely disposed corner side, similarly as for the first corner piece.

[0009] Preferably one or more of the said complementary mounting profiles are configured to form a snap connection between them. When the snap connection is reversible, i.e. if these can be dismounted and mounted multiple times without damage, this can have particular advantages during mounting. For example in that case the screen device can be simply converted from "within the frame" configuration to "in front of the frame" configuration and vice versa. For example the side frame with mounting clips, provided with adhesive strips, can be pushed to the wall and be subsequently unsnapped to subsequently be able to screw the mounting clips.

[0010] An upper guide of the screen device, that is normally suitable for mounting "within the frame" can be adapted by covering the ends of the guide groove with side plates. Accordingly it is prevented that the pull frame can be slid out of the upper guide when mounting "in front of the frame". For mounting "within the frame" this is not needed because in that case the pull frame abuts against the door or window frame. A lower guide can be provided with a guidance profile for guiding of the pull frame and a bottom side of the screen. One or more closing caps may be disposed between the pull frame and the side frame, respectively, and the lower- and upper guide. To make these fit well for mounting "in front of the frame", these may be cut to size to prevent that no gap arises, especially at the upper guide.

[0011] Further aspects of the invention may be found in a method for mounting of the pleated screen device. For example, first the upper- and lower guides are placed. Next the insect screen is placed with, on either sides, the side frame and the pull frame between the upper- and the lower guide. By snapping the fastenings on the outside of the second corner side of the first corner piece with an adhesive strip directed to the front side of the frame, the side frame can be pushed against the front side of the frame to adhere the fastenings on the front side of the frame. Next the side frame can be snapped from the adhered fastenings and the adhered fastenings may be screwed on the frame for extra support. Next the side frame can be simply snapped back onto the screwed fastenings.

[0012] Further embodiments, examples, and applications of the invention are explained in the following with reference to the figures. However, the invention is not

limited to the shown examples but only limited by the claims and possible equivalents that practice the claimed invention.

[0013] The figures show:

FIG 1 an exploded projection of an embodiment of the screen device;

FIG 2A a schematic cross-section of a side frame of the embodiment;

FIG 2B a schematic cross-section of a pull frame of the embodiment;

FIG 3 a schematic cross-section of a side frame and pull frame of the embodiment together;

FIG 4 a perspective view of the back side of an upper corner of the embodiment; and

FIG 5 a perspective view of the embodiment of the screen device separate from a door frame and an enlarged view of a fastening.

[0014] In the following description of the figures, the same reference numbers mostly refer to the same or similar parts or concepts. Details of the device may in some figures be left out or added to clarify certain aspects.

[0015] FIG 1 shows an exploded projection of an embodiment of a pleated screen device 100. The screen device 100 comprises an insect screen 10 for screening a door- or window opening for example against insects. The screen device 100 comprises a side frame 11 with first mounting profile B1, disposed on an outer side 11a thereof, for mounting of the screen device to a frame of the door- or window opening (not shown here). The screen device 100 comprises a pull frame 12 that is movable with respect to the side frame 11 for folding or unfolding of the insect screen 10. The insect screen 10 is arranged to provide, in folded condition, a passage through the door opening and, in unfolded condition, block the door opening by the screen.

[0016] The insect screen 10 is mounted between an inner side 12b of the pull frame 12 and an inner side 11b of the side frame 11 opposite said outer side 11a of the side frame 11. The screen device 100 comprises fastenings 31 with a second mounting profile B2 that is complementary to the first mounting profile B1 for cooperation with said first mounting profile B1 suitable for mounting of the screen device within the frame on an inside 51a of the frame via the fastenings 31.

[0017] The screen device 100 comprises a modular first corner piece 21 formed by a first corner side 21a and a second corner side 21c transverse to the first corner side 21a. The first corner side 21 of the first corner piece 21 comprises on the inside a third mounting profile B3 that is complementary to the first mounting profile B1 for cooperation with said first mounting profile B1 for mounting of the first corner piece 21 on the side frame 11. The second corner side 21c comprises on an outside of the first corner piece 21 a fourth mounting profile B4 that is complementary to the second mounting profile B2 for mounting of the screen device 100 "in front of the frame"

on a front side of the frame transverse to the inside of the frame via the fastenings 31.

[0018] In a preferred embodiment the screen device comprises an upper guide 13 with a guide groove 13a for accepting and guiding of the pull frame 12 and a top side 10a of the insect screen 10, wherein a first ending of the guide groove 13a is covered with first side plate 28 for being able to stop the movable pull frame 12 there against. In a further preferred embodiment a second ending of the guide groove 13a is covered with a second side plate 27 for covering of the side frame 11. In a preferred embodiment the screen device comprises a lower guide 14 for guiding of the pull frame 12 and a bottom side 10b of the insect screen 10 with a guidance profile 14a. The pull frame is thus guided in its movement between the upper guide 13 and the lower guide 14.

[0019] In the shown preferred embodiment the screen device comprises a first cover cap 23 that is cut to size and arranged against the first corner piece 21 to cover a space between the side frame 11 and the upper guide 13. In a further preferred embodiment, a second cover cap 24 is disposed against the first corner piece 21 to cover a space between the side frame 11 and the lower guide 14.

[0020] In the shown preferred embodiment the screen device comprises a third cover cap 25 that is cut to size and disposed against the second corner piece 22 to cover a space between the pull frame 12 and the upper guide 13. In a further preferred embodiment, a fourth cover cap 26 is disposed against the second corner piece 22 to cover a space between the pull frame 12 and the lower guide 14.

[0021] FIG 2A shows a schematic cross-section of the part of the screen device near the side frame 11. This shows that the side frame 11 comprises a first mounting profile B1 on its outer side 11a. The outer side 11a of the side frame 11 is situated opposite the inner side 11b where the insect screen 10 is mounted, which is partially folded here.

[0022] The figure shows fastenings 31 with a second mounting profile B2 that is complementary to the first mounting profile B1. In this way the first mounting profile B1 may be used for mounting "within the frame" (not shown) for mounting of the screen device on the inside 51a of a frame 51 of the door- or window opening.

[0023] The figure shows the modular first corner piece 21 that is formed by a first corner side 21a and a second corner side 21c. On an inside of the first corner side 21a of the first corner piece 21 this comprises a third mounting profile B3 that is complementary to the first mounting profile B1 for cooperation with said first mounting profile B1 for mounting of the first corner piece 21 on the side frame 11. The first corner piece 21 comprises a second corner side 21c transverse to the first corner side 21a that comprises, on an outside of the first corner piece 21, a fourth mounting profile B4 that is complementary to the second mounting profile B2 for mounting of the screen device "in front of the frame" on a front side 51c of the

frame 51 transverse to the inside 50a of the frame 51 via the fastenings 31 such as shown.

[0024] In a preferred embodiment the mounting profiles B1,B2,B3,B4 are arranged for being able to form both a direct connection between the side frame 11 and the fastenings 31 on an inside 51a of the frame 51 as well as to form an indirect connection via the first corner piece 21 between the side frame 11 and the fastenings 31 on the front side 51c of the frame 51. For example the third mounting profile B3 on the inside of the first corner side 21a of the first corner piece 21 dimensionally matches with the second mounting profile B2 of the fastenings 31. For example the fourth mounting profile B4 on the outside of the second corner side 21c of the first corner piece 21 dimensionally matches with the first mounting profile B1 on the outer side 11a of the side frame 11.

[0025] FIG 2B shows a schematic cross-section of the part of the screen device near the pull frame 12. On the inner side 12b of the pull frame 12 the insect screen 10 is mounted. The insect screen can be folded by moving the pull frame 12 to the side frame 11 and thus provide an opening in the door or the window.

[0026] In a preferred embodiment the screen device comprises a brush 15 disposed on a back side of the pull frame 12, wherein hairs of the brush extend substantially in a direction transverse to a movement direction of the pull frame 12, for, in use, closing off an opening between the pull frame 12 and the frame 52, when the insect screen 10 is unfolded and the insect screen screens the door- or window opening.

[0027] In a preferred embodiment an outer side 12a of the pull frame 12, opposite the inner side 12b of the pull frame 12, comprises a fifth mounting profile B5 for covering the pull frame 12. In a further preferred embodiment the screen device comprises a second corner piece 22. For example the second corner piece 22 is formed by a first corner side 22a and a second corner side 22c transverse to the first corner side 22a. The first corner side 22a comprises, on an inside thereof, a sixth mounting profile B6 that is complementary to the fifth mounting profile B5 for cooperation with said fifth mounting profile B5 for mounting of the second corner piece 22 on the outer side 12a of the pull frame 12. The second corner side 22c includes a brush 15 for, in use, closing off an opening between the pull frame 12 and the frame 52., when the insect screen 10 is unfolded and the insect screen screens the door- or window opening. For example, wherein an outside of the second corner piece 22 comprises a seventh mounting profile B7; wherein the brush 15 comprises an eighth mounting profile B8 that is complementary to the seventh mounting profile B7 for the mounting of the brush 15 with hairs in a direction parallel to the outer side 12a of the pull frame 12 and transverse to the front side 52c of the frame 52.

[0028] Preferably one or more of the complementary mounting profiles B1,B2; B1,B3; B2,B4; B6,B6; B7,B8 are configured to form a snap connection. It is particularly preferred that the snap connection is reversible.

[0029] FIG 3 shows a schematic cross-section of a side frame 11 and pull frame 12 of the screen device 100 together. In the shown depiction, the insect screen (not visible) is folded in by bringing the pull frame 12 and the side frame 11 together. The side frame 11 is mounted via the first corner piece 21 and the fastenings 31 on the front side of the frame 51. The pull frame 12 comprises a brush 15 that is mounted via the second corner piece 22.

[0030] FIG 4 shows a perspective view of the back side of an upper corner of the screen device 100. In the upper corner there are the side frame 11 and pull frame 12. The upper guide 13 has a screw hole 13h among other things. The screw hole 13h may serve to prevent that the upper guide 13 would be able to shift. This is an addition with respect to an upper guide for mounting "within the frame" (not shown) because the latter is clamped between the frame. Also the side plate 27 on the ending of a groove in the upper guide 13 is added to cover the side of upper guide 13 where this is not needed for mounting "within the frame". The pull frame 12 comprises a brush 15 that when mounting "in front of the frame", such as shown, is directed transverse to the movement direction (to the front side of the frame, not shown here).

[0031] FIG 5 shows (right side) a perspective view of a screen device 100 separate of a door frame 51; and (left side) an enlarged view of a fastening 31. In a preferred embodiment such as shown the fastenings 31 comprise a plurality of flat mounting clips wherein the second mounting profile B2 protrudes from the fastening mounting clips. In a further preferred embodiment the fastenings 31 comprise an adhesive strip on a side opposite the second mounting profile B2 for adhering of the fastenings 31 on the frame 51. In a further preferred embodiment the fastenings 31 comprise a screw hole 31h for screwing of the fastenings 31 on the frame 51.

[0032] A method for the mounting of the pleated screen device 100 such as described herein may for example comprise one or more of the following steps: the mounting of the upper guide above a door- or window opening; the mounting of the lower guide below the door- or window opening; the placement of the insect screen 10 with, on either sides, the side frame and the pull frame between the upper guide and the lower guide. For example the fastenings 31 are snapped on the outside of the second corner side 21c of the first corner piece 21 with an adhesive strip 31a directed to the front side 51c of the frame 51, wherein the side frame 11 is pushed against the front side 51c of the frame 51 to adhere the fastenings 31 on the front side 51c of the frame 51. For example the side frame 11 may be snapped away from the adhered fastenings 31; the adhered fastenings 31 are screwed on the frame 51; and the side frame 11 can be snapped back on the screwed fastenings 31.

[0033] It will be understood that the invention is not limited to the shown and described embodiments but also includes variants thereof. The various elements of the examples as discussed may be combined in other ways

than shown or used separately. In interpreting the enclosed claims it will be understood that the expression "comprises" does not exclude that other elements than recited may be present. The expression "a" preceding an element does not exclude a plurality of these elements. Reference numbers do not limit the scope of the claims but only serve for illustration.

10 Claims

1. A pleated screen device (100) comprising
 - an insect screen (10) for screening a door- or window opening against insects;
 - a side frame (11) with a first mounting profile (B1) disposed on an outside (11a) thereof for mounting of the screen device to a frame (51) of the door- or window opening;
 - a pull frame (12) that is movable with respect to the side frame (11) for folding or unfolding of the insect screen (10), wherein the insect screen (10) is mounted between an inner side (12b) of the pull frame (12) and an inner side (11b) of the side frame (11) opposite said outside (11a) of the side frame (11);
 - fastenings (31) with a second mounting profile (B2) that is complementary to the first mounting profile (B1) for cooperation with said first mounting profile (B1) suitable for mounting of the screen device within the frame on an inside (51a) of the frame (51) via the fastenings (31);
 - characterized in that** the screen device (100) further comprises
 - a modular first corner piece (21) formed by

a first corner side (21a) that, on an inside of the first corner piece (21), comprises a third mounting profile (B3) that is complementary to the first mounting profile (B1) for cooperation with said first mounting profile (B1) for mounting of the first corner piece (21) on the side frame (11); and a second corner side (21c) transverse to the first corner side (21a), which second corner side comprises, on an outside of the first corner piece (21), a fourth mounting profile (B4) that is complementary to the second mounting profile (B2) for mounting of the screen device (100) in front of the frame on a front side (51c) of the frame (51) transverse to the inside (50a) of the frame (51) via the fastenings (31).

2. The pleated screen device (100) according to claim 1, comprising a brush (15), disposed on a back side of the pull frame (12), wherein hairs of the brush extend substantially in a direction transverse to a movement direction of the pull frame (12), for, in use, closing off an opening between the pull frame (12) and the frame (52) when the insect screen (10) is unfolded and the insect screen screens the door- or window

opening.

3. The pleated screen device (100) according to claim 2, wherein an outside (12a) of the pull frame (12) that is opposite the inner side (12b) of the pull frame (12) comprises a fifth mounting profile (B5) for covering the pull frame (12); the screen device (100) further comprising a second corner piece (22) formed by a first corner side (22a) with, on an inside thereof, a sixth mounting profile (B6) that is complementary to the fifth mounting profile (B5) for cooperation with said fifth mounting profile (B5) for mounting of the second corner piece (22) on the outside (12a) of the pull frame (12); and a second corner side (22c), transverse to the first corner side (22a), with thereon a brush (15) for, in use, closing off an opening between the pull frame (12) and the frame (52) when the insect screen (10) is unfolded and the insect screen screens the door- or window opening.
4. The pleated screen device (100) according to claim 3, wherein an outside of the second corner piece (22) comprises a seventh mounting profile (B7); wherein the brush (15) comprises an eighth mounting profile (B8) that is complementary to the seventh mounting profile (B7) for the mounting of the brush (15) with hairs in a direction parallel on the outside (12a) of the pull frame (12) and transverse to the front side (52c) of the frame (52).
5. The pleated screen device (100) according to any of the preceding claims, wherein one or more of the complementary mounting profiles (B1,B2; B1,B3; B2,B4; B6,B6; B7,B8) are configured to form a snap connection
6. The pleated screen device (100) according to claim 5, wherein the snap connection is reversible.
7. The pleated screen device (100) according to any of the preceding claims, wherein the fastenings (31) comprise a plurality of flat mounting clips, wherein the second mounting profile (B2) protrudes from the mounting clips.
8. The pleated screen device (100) according to claim 7, wherein the fastenings (31) comprise an adhesive strip on an opposite side of the second mounting profile (BB) for adhering of the fastenings (31) on the frame (51) and wherein the fastenings (31) comprise a screw hole for screwing of the fastenings (31) on the frame (51).
9. The pleated screen device (100) according to any of the preceding claims comprising an upper guide (13) with a guide groove (13a) for accepting and guiding of the pull frame (12) therein; wherein a first ending of the guide groove (13a) is covered with first side plate (28) for being able to stop the movable pull frame (12) there against.
10. The pleated screen device (100) according to any of the preceding claims comprising a first cover cap (23) that is cut to size and disposed against the first corner piece (21) to cover a space between the side frame (11) and the upper guide (13).
11. The pleated screen device (100) according to any of the preceding claims, wherein the mounting profiles (B1,B2,B3,B4) are arranged to being able to form both a direct connection between the side frame (11) and the fastenings (31) on an inside (51a) of the frame (51) as well as to form an indirect connection via the first corner piece (21) between the side frame (11) and the fastenings (31) on the front side (51c) of the frame (51).
12. The pleated screen device (100) according to any of the preceding claims wherein the third mounting profile (B3) on the inside of the first corner side (21a) of the first corner piece (21) dimensionally matches with the second mounting profile (B2) of the fastenings (31).
13. The pleated screen device (100) according to any of the preceding claims wherein the fourth mounting profile (B4) on the outside of the second corner side (21c) of the first corner piece (21) dimensionally matches with the first mounting profile (B1) on the outside (11a) of the side frame (11).
14. A method for the mounting of the pleated screen device (100) according to any of the preceding claims, the method comprising
the mounting of the upper guide (13) above a door- or window opening;
the mounting of a lower guide (14) below the door- or window opening; and
the placement of the insect screen (10) with on either sides the side frame (11) and the pull frame (12) between the upper guide (13) and the lower guide (14).
15. The method according to claim 14, wherein the fastenings (31) on the outside of the second corner side (21c) of the first corner piece (21) are snapped with an adhesive strip (31a) directed to the front side (51c) of the frame (51), wherein the side frame (11) against the front side (51c) of the frame (51) is pushed to adhere the fastenings (31) on the front side (51c) of the frame (51).
16. The method according to claim 14 or 15, wherein the side frame (11) is snapped away from the adhered fastenings (31); the adhered fastenings (31) are screwed on the frame (51); and the side frame (11)

is snapped back on the screwed fastenings (31).

5

10

15

20

25

30

35

40

45

50

55

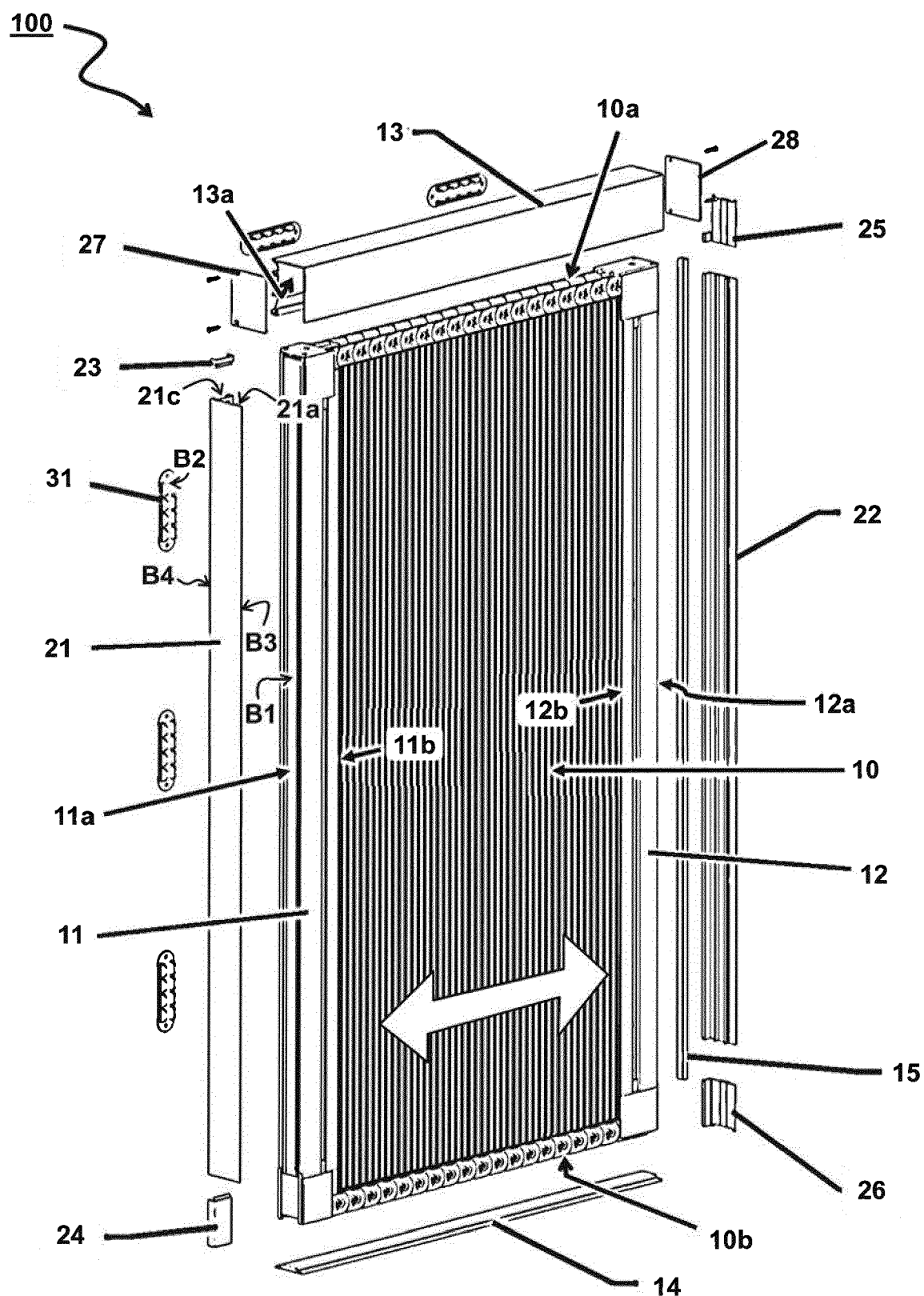


FIG 1

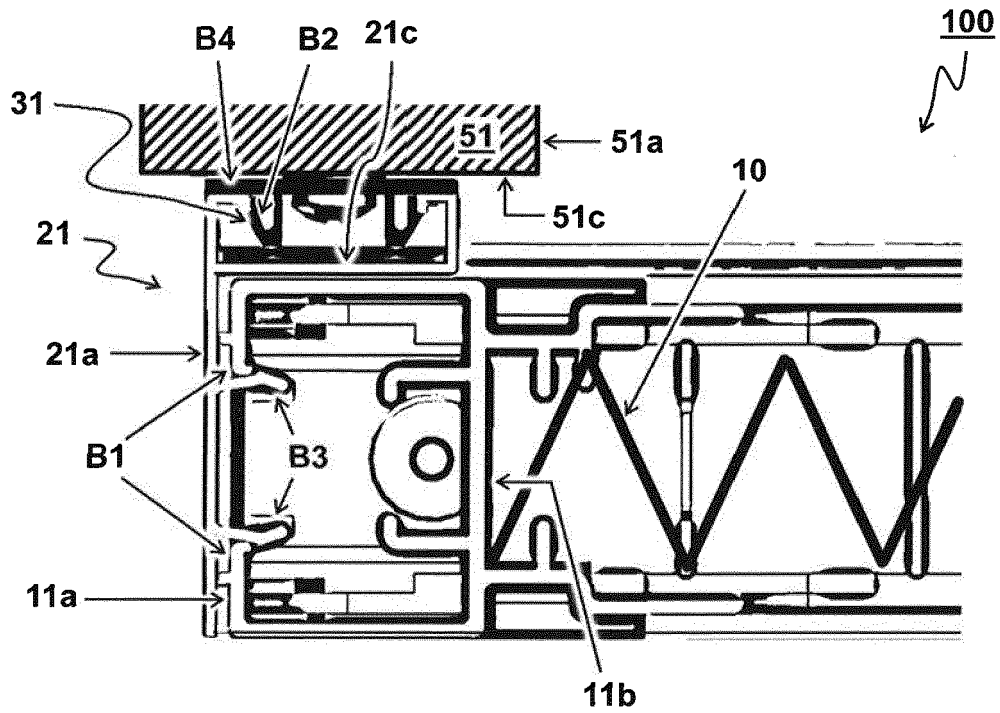


FIG 2A

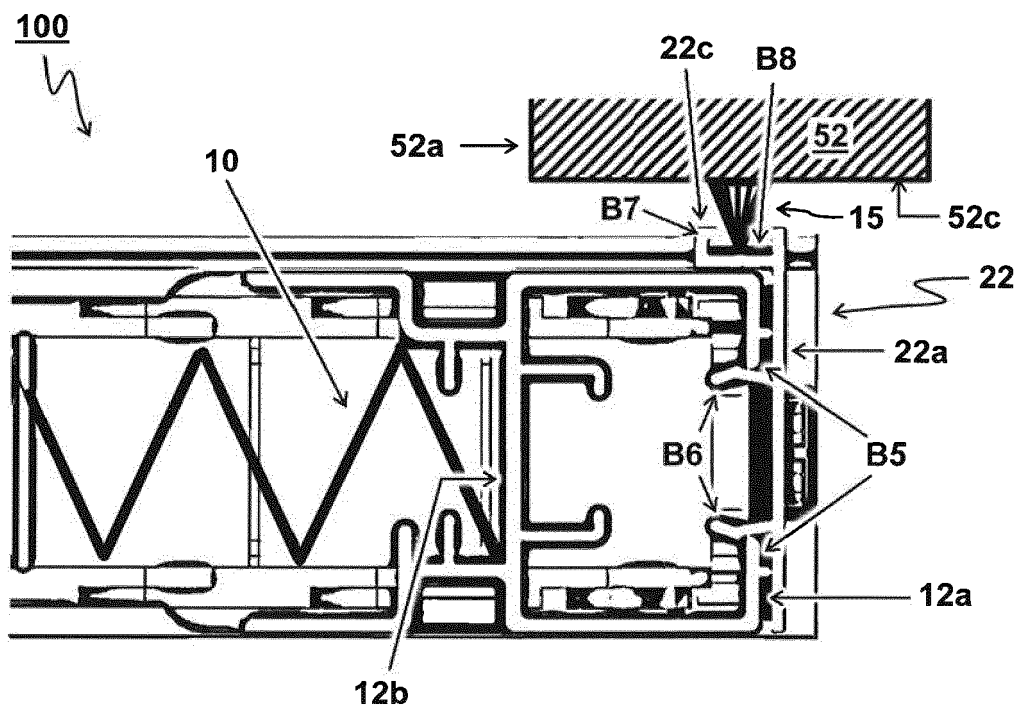


FIG 2B

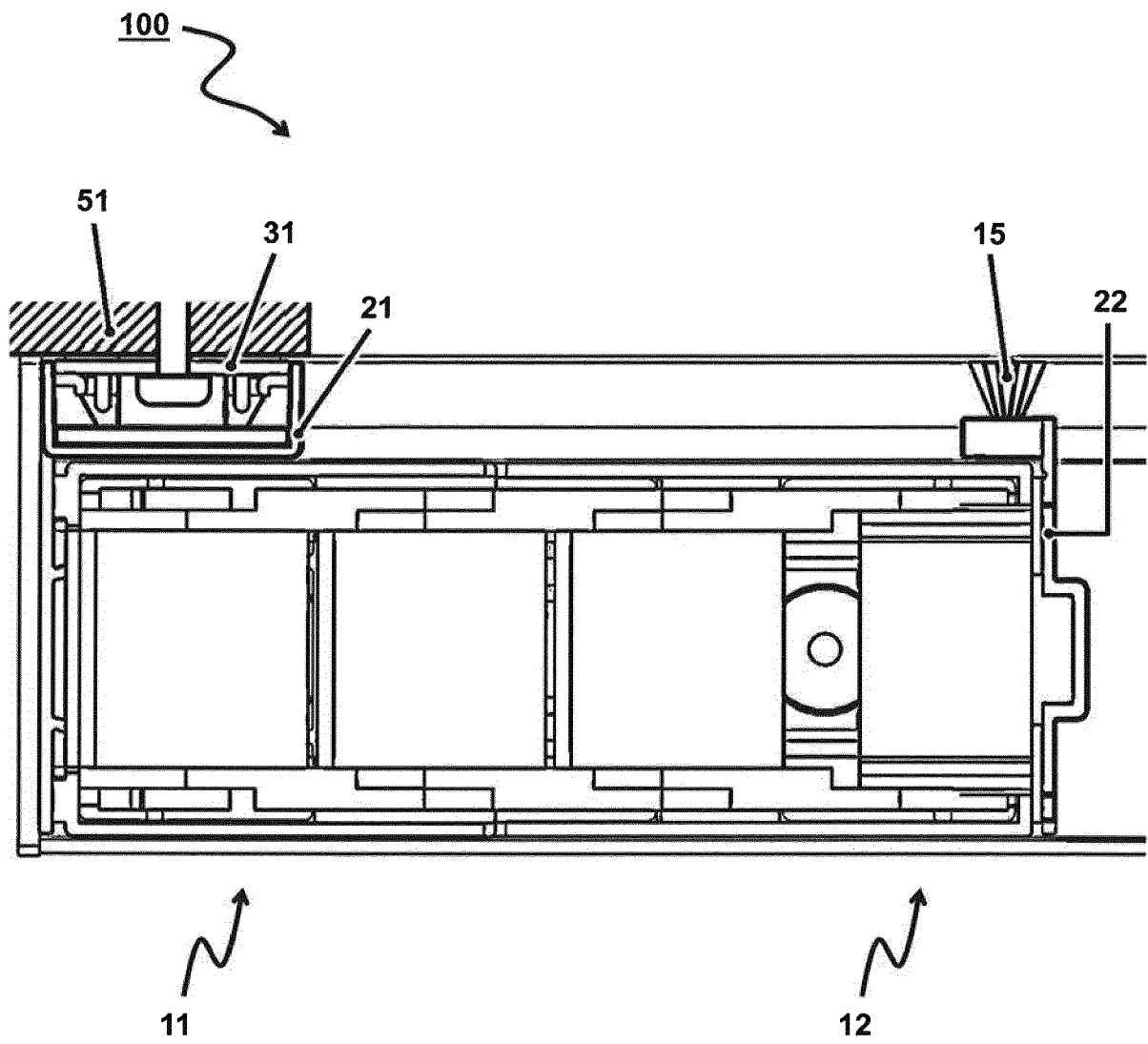


FIG 3

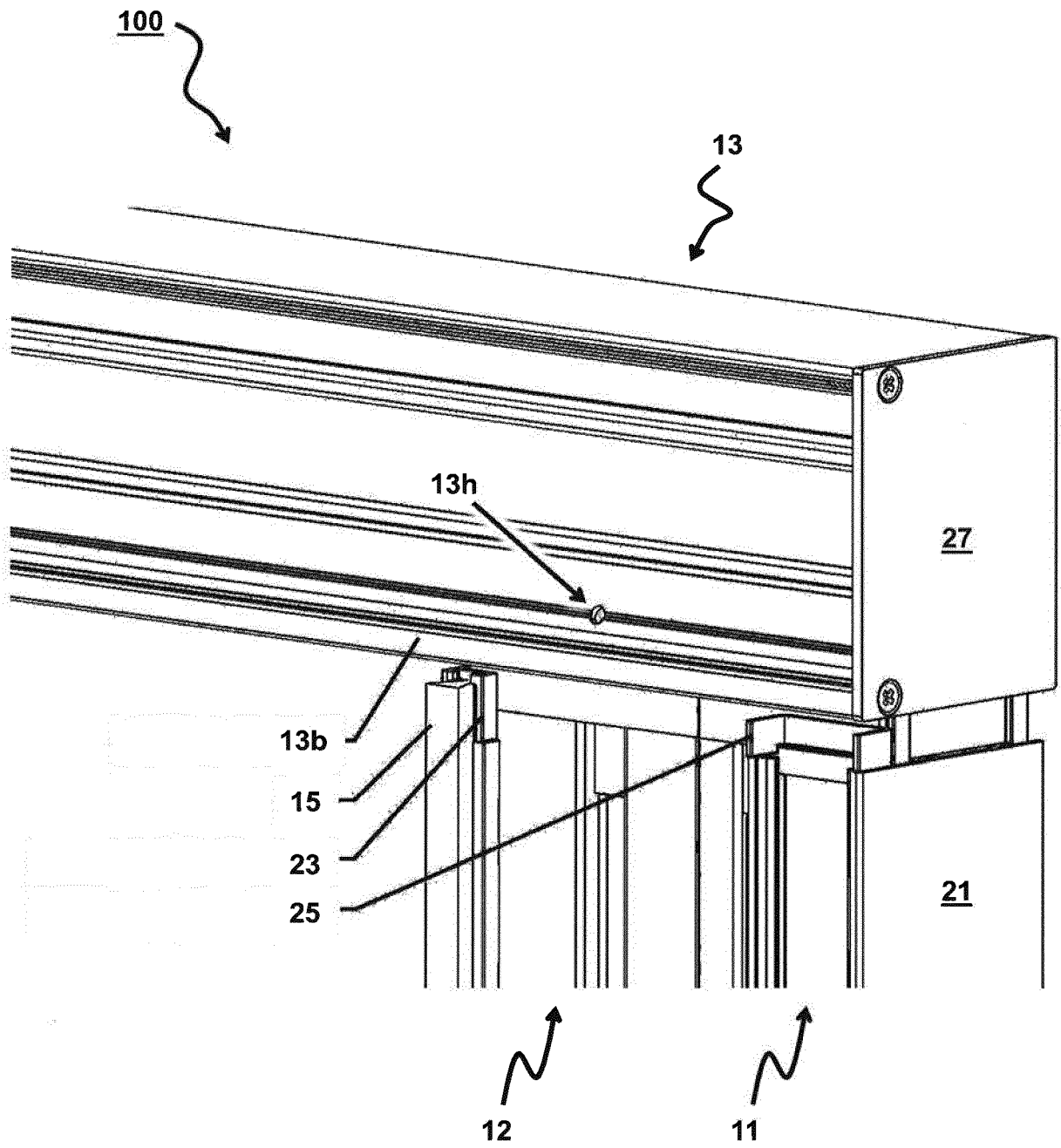


FIG 4

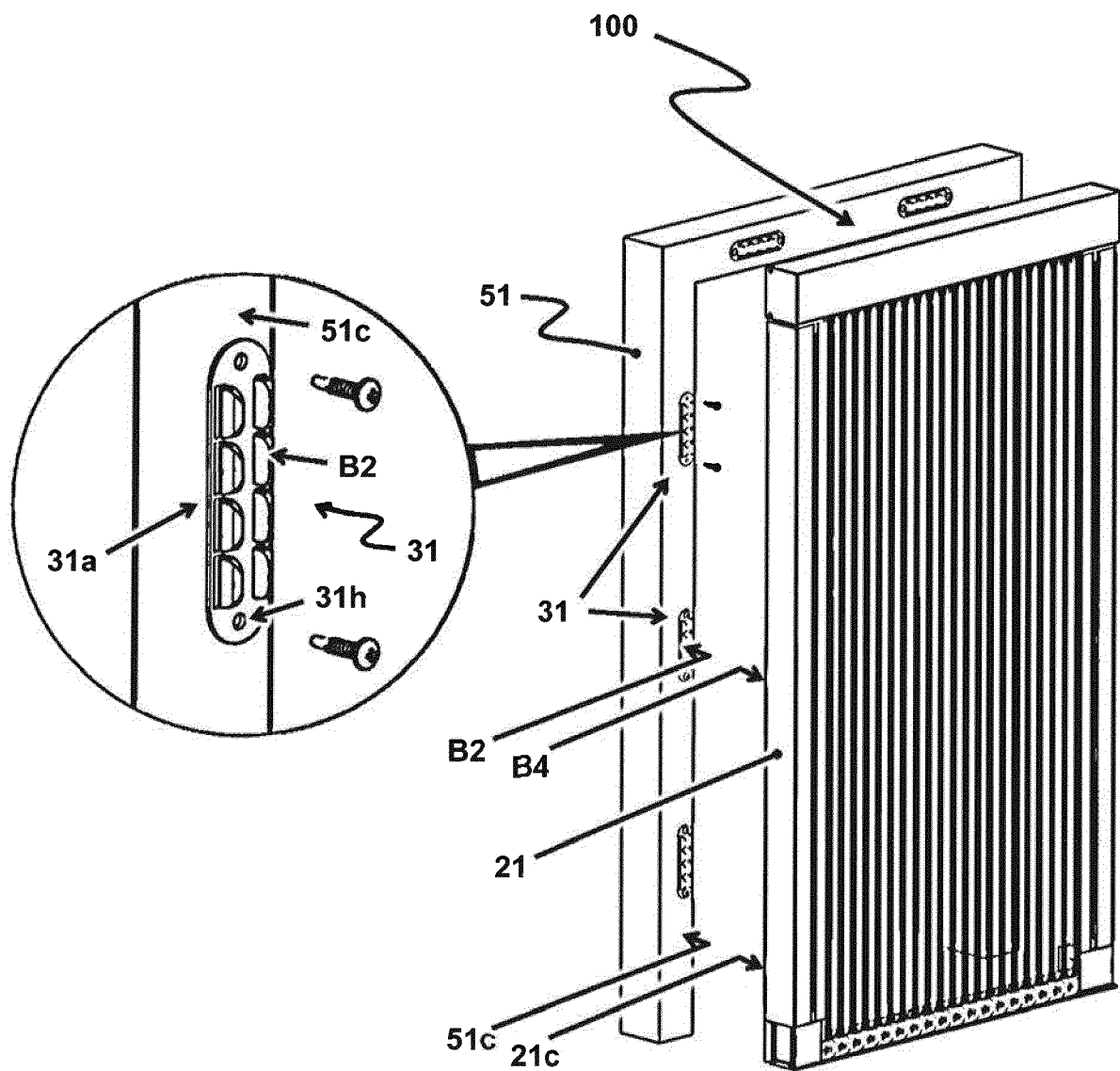


FIG 5



EUROPEAN SEARCH REPORT

Application Number
EP 16 18 1940

5

10

15

20

25

30

35

40

45

50

55

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A	US 2014/332169 A1 (VAN LOOSBROEK PATRICK FRANCISCUS JOHANNES [NL]) 13 November 2014 (2014-11-13) * figures 1,10,11,18A,18A * * paragraphs [0041], [0048], [0049], [0055], [0056] * -----	1-16	INV. E06B9/52 E06B9/262
A	US 6 318 438 B1 (UNO AKIHIKO [JP] ET AL) 20 November 2001 (2001-11-20) * figures 1,2 * -----	1	
			TECHNICAL FIELDS SEARCHED (IPC)
			E06B
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 19 October 2016	Examiner Tänzler, Ansgar
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

 1
EPO FORM 1503 03/82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 16 18 1940

5

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

19-10-2016

10

15

20

25

30

35

40

45

50

55

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2014332169 A1	13-11-2014	AU 2012287581 A1	20-02-2014
		CA 2843235 A1	31-01-2013
		EP 2753777 A1	16-07-2014
		JP 2014523988 A	18-09-2014
		NL 2007194 C	29-01-2013
		RU 2014107657 A	10-09-2015
		US 2014332169 A1	13-11-2014
		WO 2013015689 A1	31-01-2013

US 6318438 B1	20-11-2001	NONE	
