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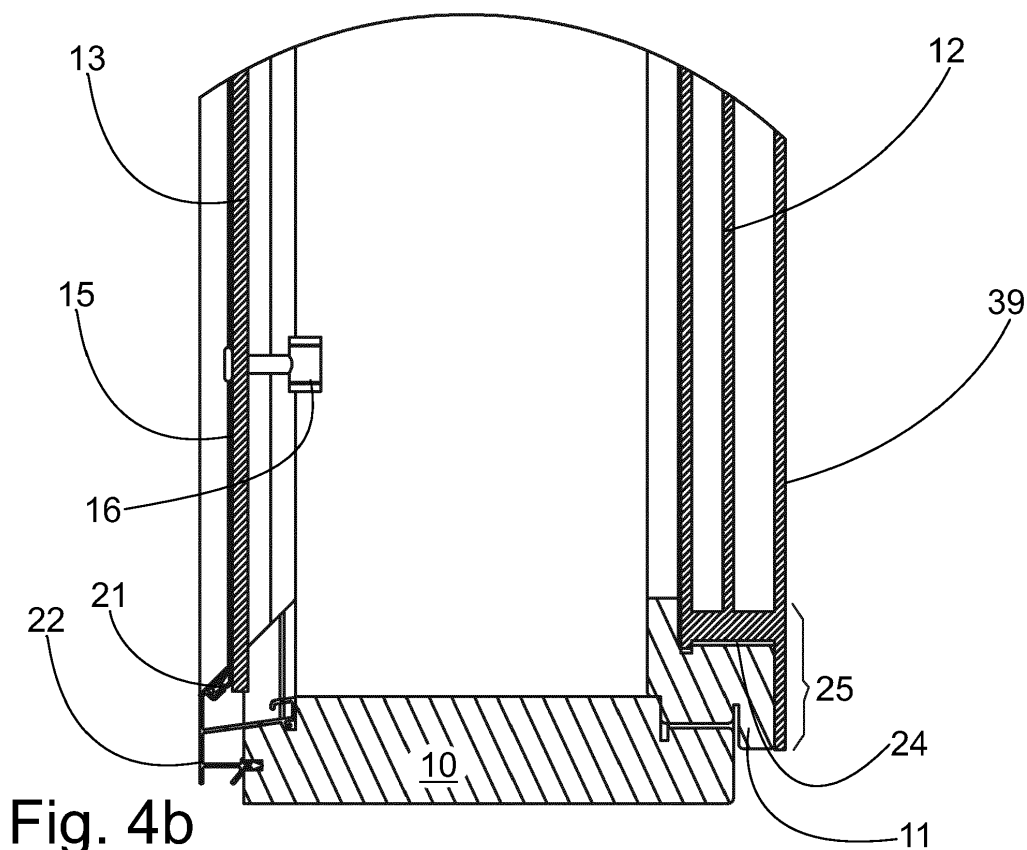
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(54) Construction of a window or a door

(57) The invention relates to a construction for a window including a frame (10) and a sash (11) hinged to the frame (10). The sash is provided with a glass element (12). The outer surface (39) of the glass element (12).

essentially flush with the face (23) of the sash (11), or the glass element (12) forms the face (23) of the sash (11).

**Fig. 4b****EP 2 845 981 A1**

Description

[0001] The invention relates to a construction for a window or a door including a frame and a sash provided with a glass element and hinged to the frame.

[0002] Openable windows with two sashes are mainly used in the Nordic countries. One such window is the so-called MSE window, which opens inward, has two sashes and hinges at the side. In the MSE window, the inner sash is equipped with a double pane thermal glass and the outer sash with a flat glass.

[0003] In the other countries, a so-called DK (drehschwenk) window is generally used, which is a tilt and turn window with one sash. In this window type, a double or triple insulating glass element is fitted to one sash. In addition, the sash is generally hinged with special fittings, which allows opening the sash to the side as well as to the ventilation position by means of the bottom hinges.

[0004] Attempts have been made to improve the heat insulation capacity of windows using thermal pane glass and its various coatings. Nevertheless, heat bridges exist in known windows. In addition, it is difficult to keep them clean and almost all of them look the same. Due to massive constructions, only a part of the window opening can be utilised. In other words, the viewing angle is limited. At the same time, thick sashes limit the angle of opening, and the installation space between the sashes is reduced, which may prevent installation of window blinds, for example. Furthermore, keeping the window or the door clean is challenging.

[0005] The object of the invention is to provide a novel construction for a window or a door, which includes fewer components than before and is easier to clean than heretofore. The characteristic features of the construction according to this invention become apparent from the appended claims. According to the invention, a novel glass element and, if necessary, a sashless glass element, are surprisingly utilised in the construction for a window or a door. Thus, the appearance changes and cleaning becomes easier and, at the same time, the overall design is simplified and the installation space is increased. Simultaneously, cleanability improves and influencing the appearance is enabled. In addition, the number of the components decreases and the viewing angle increases. However, a construction for a window or a door is simultaneously achieved that is tighter than before. The U-value of the window or the door is lower than before. The sashless concept increases luminosity and widens the viewing angle, and a novel appearance is achieved via printing.

[0006] The invention is described below in detail by making reference to the appended drawings illustrating some of the embodiments of the invention, in which

Figure 1 is a construction for a window according to the invention in the opened state,

Figure 2 is the window of Figure 1 seen from another viewing angle,

Figure 3a

is an oblique front view of one embodiment of the construction for a window according to the invention in the closed state,

5 Figure 3b

is a partial cross-sectional view of the construction for a window of Figure 3a, is an oblique front view of a second embodiment of the construction for a window according to the invention in the closed state,

Figure 4a

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Figure 4b

is a partial cross-sectional view of the construction for a window of Figure 4a, is a cross-sectional view of a third embodiment of the construction for a window according to the invention,

Figure 5a

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Figure 5b

is a partial enlargement of Figure 5a, is a partial cross-sectional view of a fourth embodiment of the construction for a window according to the invention,

Figure 6a

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Figure 6b

is a partial enlargement of Figure 6a, is a partial cross-sectional view of a fifth embodiment of the construction for a window according to the invention,

Figure 7a

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Figure 7b

is a partial enlargement of Figure 7a, illustrate the construction for an internal door according to the invention seen from different directions,

Figures 8a-d

Figure 8e

is a partial enlargement of Figure 8c, illustrate the construction for an external door according to the invention seen from different directions,

Figures 9a-d

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Figure 9e

is a partial enlargement of Figure 9c.

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[0007] Figure 1 shows a construction for a window according to the invention in the opened state. Generally, a construction for a window includes a frame 10 and a sash 11 hinged to the frame 10. In addition, a glass element 12 is arranged in the sash 11 (shown in more detail in Figures 3a and 3b). The construction for a window also includes a sashless glass element 13, hinged to the frame 10, which is separate from the glass element 12 of the sash 11. Without the sash, the thickness of the glass element is only a fraction of that known. In addition, glazing beads as well as protrusions created by the sash, which make cleaning more difficult, are avoided. In a known window construction, the outer glass element has aluminium sashes, which conduct heat efficiently. This disadvantageous construction and such a behaviour can now be avoided with the sashless construction. At the same time, the viewing angle from inside to outside essentially increases as the outer window element extends nearly to the frame. At the same time, a large installation space remains in the window construction for window blinds, for example.

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[0008] In the embodiment shown, the sashless glass element 13 is composed of a single glass pane 14, which requires a small space and is easy to fasten. Advantageously, the single glass pane is tempered glass, where-

by sufficient resistance is achieved. For example, a thickness of six millimetres is sufficient for most window constructions.

[0009] It is now possible to have an influence on the appearance of a sashless glass element. According to Figure 2, a sashless glass element 13 includes a digital printing pattern 15. Here, white colour has been used and the printing pattern encircles the entire glass element as a narrow band, which is illustrated by a broken line. The form, size and colour of the printing can be very freely selected. The printing is very durable and cannot be scraped off. The printing is on one of the surfaces of the glass element; however, it can also be made on both surfaces of the glass element, and the two surfaces can be different. Thus, the appearance of the window can be influenced in a more versatile way than before.

[0010] Furthermore, the sashless glass element 13 includes a hinge 16, which is fastened to an opening 17 arranged in the sashless glass element 13. The hinge 16 is fastened to the frame 10 in the normal way. Here the opening is a hole, made in the glass element, to which the hinge is fastened with suitable fasteners and equipped with paddings. In this way, breaking of tempered glass can be avoided. In the same way, two hold-open devices 18, fastened to the sash 11, are fastened to the sashless glass element 13. Thus, the whole window construction opens simultaneously. Certainly, separate locks can be fitted to the sashless glass element for locking. This sash 11 has one locking latch 19, which is operated with a handle 20.

[0011] The frame 10 is made of wood and includes metal fittings 22 equipped with a seal 21. In addition, the sashless glass element 13 is arranged to seal against said seal 21. Thus, a tight construction is achieved in a simple way and a heat bridge is not generated between the metal fittings and the glass element, because the seal is present all over between these. A double seal located more internally has seals in both the frame and the sash. Thus, the sash contacts the frame seal in one point and the sash seal encounters the frame in another point (not shown).

[0012] The construction for a window according to the invention also includes other surprising characteristics. Namely, the outer surface 39 of the glass element 12 is essentially flush with the face 23 of the sash 11. Thus, the window construction looks neatly finished and is easy to keep clean, being free of the conventional steps. One method of doing this is to arrange into the sash a rebate, essentially identical in depth with the glass element, in which the glass element is placed (Figure 3b). The result is tight and neatly finished.

[0013] External glazing beads are also missing from the window construction since a glued joint is present between the sash 11 and the glass element 12. This facilitates the manufacture and makes the whole unit composed of the sash and the glass element extremely resistant and rigid. Thus, it is possible to manufacture quite large window constructions using material strengths that

are lower than before. As the space required by the glued joint is taken into account in the dimensioning of the rebate, the glass element is flush with the face of the sash in the final construction.

[0014] The sash 11 is also made of wood, which, being a massive construction, is a good heat insulation. In addition, a glued joint forms a thermal barrier, which further improves the tightness and insulation capacity of the window construction. Here, the glass element 12 is also provided with a digital printing pattern 25 at least at the glued joint 24. In the embodiments proposed, the printing is coloured and entirely covers the glued joint. At the same time, the printing prevents access of UV beams to the glued joint, which is thus protected by the printing. Again, the form, size and colour of the printing can be very freely selected. Due to the massive sash, the rebate can be made deep so that the glass element 12 can be formed of insulating glass. In this insulating glass pane, an intermediate construction has been used to combine two flat glass panes into one element, within which insulating gas can be supplied. The insulating glass pane can also include several flat glass panes. The glued joint may shine dark through the printing; however, it can be made invisible using suitable print coverage.

[0015] Figures 4a and 4b illustrate another embodiment, in which the glass element 12 forms the face 23 of the sash 11. In other words, the glass element extends to the entire area of the sash. Thus, the glass element forms the most external part of the window construction, in which case it is extremely easy to keep clean. In addition, the glass surface covers almost the whole window, providing a completely novel appearance for the window. Here, the glass element 12 is composed of three flat glass panes. The glass element has a suitable hole or at least an opening for the handle. On the other hand, a locking construction, operated at the side of the sash, can be fitted inside the sash. Thus, the glass element can be fully continuous and an impressive printing pattern can be added to it. The above-mentioned sash equipped with a glass element can also be used for forming a DK window. Figures 5a and 5b illustrate a DK window having a narrow frame 10 and a metal fitting 22 fastened thereto, which encircles the entire frame forming the outer frame of the DK window. The sash 11 has almost equal thickness with the frame and is provided with a rebate for the glass element 12. Seals and hinges are not shown; however, in the version proposed, triple sealing can be used between the frame and the sash. A glued joint 24 is disposed between the glass element 12 and the sash 11 according to the invention. Furthermore, the glass element 12 is provided with a digital printing pattern 25. Here, too, the glass element 12 extends to the entire area of the sash 11 thus forming the face of the window construction. The glass element proposed is triple.

[0016] Figure 6a is a partial cross-sectional view of a fourth embodiment of the window according to the invention. As in Figure 3b, a sashless glass element 13 is supported to a frame 10 by a hinge 16. Again, metal fittings

22, equipped with a seal 21, are driven in the frame 10 (Figure 6b). In addition, a lock housing 27 equipped with a latch bolt 26 is fastened to the sashless glass element 13, the latch bolt 26 being arranged to abut against the metal fittings 22 when in the locked position. Thus, the most external glass element 13 can be tightly locked. When in the closed position, the glass element 13 abuts against the seal 21 and, correspondingly, the latch bolt 26 against the metal fittings 22. Here, the frame 28 of the lock housing 27 is glued to the glass element 13. Such fastening is easy and strong and requires little space. The glue is applied on both sides of the glass element, thus ensuring robust fastening. The gaps between the frame 28 and the glass element 13 shown in Figure 6b are meant for the glue. The lock housing 27 has a keyway 29, which allows releasing the window lock with a conventional window-opening device. A sufficient number of lock housings are glued to the glass element mainly depending on the size of the window.

[0017] Figure 7a is a partial cross-sectional view of a fifth embodiment of the window according to the invention. Here, the sashless glass element 13 is almost equal with the embodiment of Figure 6a. Instead, an opening 31, through which the locking device 32 disposed in the sash 11 is fitted, is provided through the part 30 of the glass element 12 forming the face 23 of the sash 11 (Figure 7b). Here, too, the locking device 32 includes a latch bolt 26, which locks to the counterpart 33 formed in the frame 10. The bar 34 of the locking device 32 uses the latch bolt 26 and the bar 34 extends through the part 30 of the glass element 12. A handle or a turn knob is attached to the bar (not shown). Due to the opening, a large glass surface can be used, the locking device remaining hidden inside the sash. The bar can be left out, in which case the locking device is operated with the above-mentioned window-opening device.

[0018] The construction described above is additionally provided with a low inner sash 11. The novel construction is enabled by a glass element 12 glued from the interior. Thus, the frame of the locking device 32 can be located further inwards than the outer edge of the glass element 12. This being the case, a low sash can be used, thus achieving a wider viewing angle than before. Despite the low construction, a robust locking device can be used. In addition, connecting the glass element 12 and the sash 11 by gluing provides a strong construction. Digital printing can be used in this embodiment as well.

[0019] Figures 8a to 8d illustrate the construction for an internal door according to the invention seen from different directions. Here the glass pane 35 is glued to a framing timber 36. Expressed by the terms of the invention, the glass element forms the face of the sash. The construction is simple and the entire face of the internal door is glass, providing an unconventional appearance (Figure 8a). The appearance can be further influenced by the printing 25, which is here rounded and covers the outer edges 37 of the entire glass pane 35.

[0020] Figures 9a to 9d illustrate the construction for an external door according to the invention seen from different directions. Here the glass pane 12 of the external door is glued to a framing timber 36 from inside. In the external door application, the glass element also forms the face of the sash, which is directed towards the inside of the building. Thus, seen from the inside, the entire face of the external door is glass, providing an unconventional appearance (Figure 9d). In other words, the face is towards the interior of the frame in this embodiment. The appearance can be further influenced by the printing 25, which is here rounded and covers the outer edges 37 of the entire glass element 12. Correspondingly, the framing timber 36 is provided with a profiled chamfer 38, which allows water to flow away naturally. At the same time, separate glazing beads are not necessary, and due to the glued joint, the framing timber and the glass element form a rigid unit. Seals are not shown in Figures 8e and 9e.

[0021] In the embodiments of Figures 1 to 8e, the sash 11 is the inner sash of those included in the window or door construction when the face 23 is away from the frame 10. Correspondingly, in the embodiment of Figure 9e, the sash 11 is the outer sash of those included in the window or door construction when the face 23 is towards the frame 10.

Claims

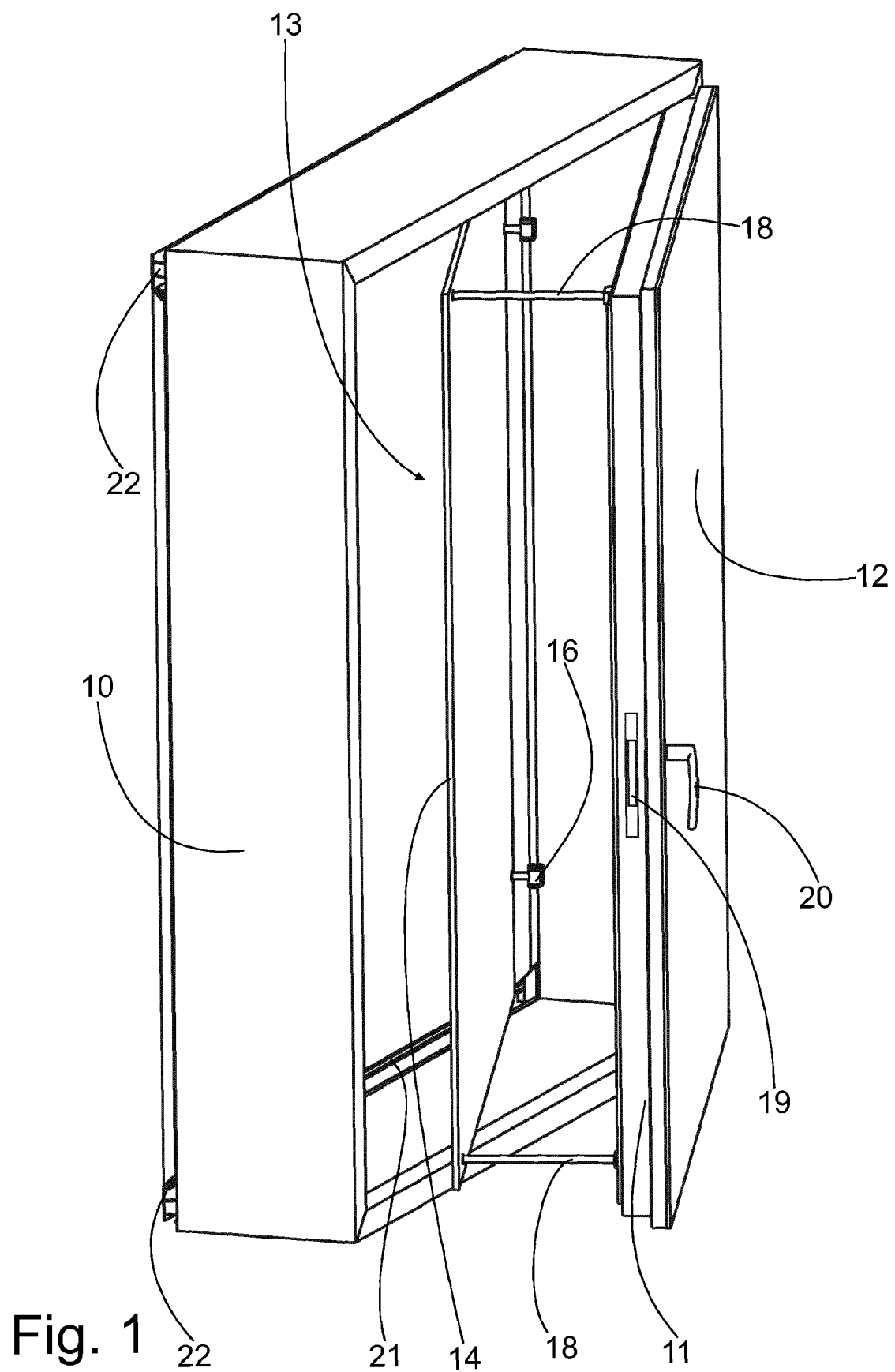
1. Construction for a window or a door including a frame (10) and a sash (11) provided with a glass element (12) and hinged to the frame (10), **characterised in that** the outer surface (39) of the glass element (12) is essentially flush with the face (23) of the sash (11), or the glass element (12) forms the face (23) of the sash (11).
2. Construction according to claim 1, **characterised in that** the sash (11) is the inner sash of those included in the window or door construction when the face (23) is away from the frame (10).
3. Construction according to claim 1, **characterised in that** the sash (11) is the outer sash of those included in the window or door construction when the face (23) is towards the frame (10).
4. Construction according to any of claims 1 to 3, **characterised in that** a glued joint (24) is disposed between the sash (11) and the glass element (12).
5. Construction according to any of claims 1 to 4, **characterised in that** the glass element (12) is provided with a digital printing pattern (25).
6. Construction according to claims 4 and 5, **characterised in that** the digital printing (25) is located at

the glued joint (24).

7. Construction according to claim 5 or 6, **characterised in that** the digital printing (25) uniformly covers the outer edges (37) of the glass element (12). 5
8. Construction according to any of claims 1 to 7, **characterised in that** the glass element (12) is composed of insulating glass. 10
9. Construction according to any of claims 1 to 8, **characterised in that** an opening (30), through which the locking device (32) disposed in the sash (11) is fitted, is provided through a part (30) of the glass element (12) forming the face (23) of the sash (11). 15
10. Construction according to any of claims 1 to 9, **characterised in that** the window construction further includes a sashless glass element (13), which is hinged to the frame (10) and is separate from the glass element (12) of the sash (11). 20
11. Construction according to any of claims 1 to 10, **characterised in that** the sashless glass element (13) is composed of a single glass pane (14). 25
12. Construction according to any of claims 1 to 11, **characterised in that** the frame (10) includes metal fittings (22) equipped with a seal (21) and the sashless glass element (13) is arranged to be sealed against said seal (21). 30
13. Construction according to claim 12, **characterised in that** a lock housing (27) equipped with a latch bolt (26) is fastened to the sashless glass element (13), said latch bolt (26) being arranged to abut against the metal fittings (22) when in the locked position. 35
14. Construction according to any of claims 1 to 13, **characterised in that** the sashless glass element (13) includes a hinge (16), which is fastened to the opening (17) arranged in the sashless glass element (13). 40
15. Construction according to any of claims 1 to 14, **characterised in that** the sashless glass element (13) includes a digital printing pattern (15). 45

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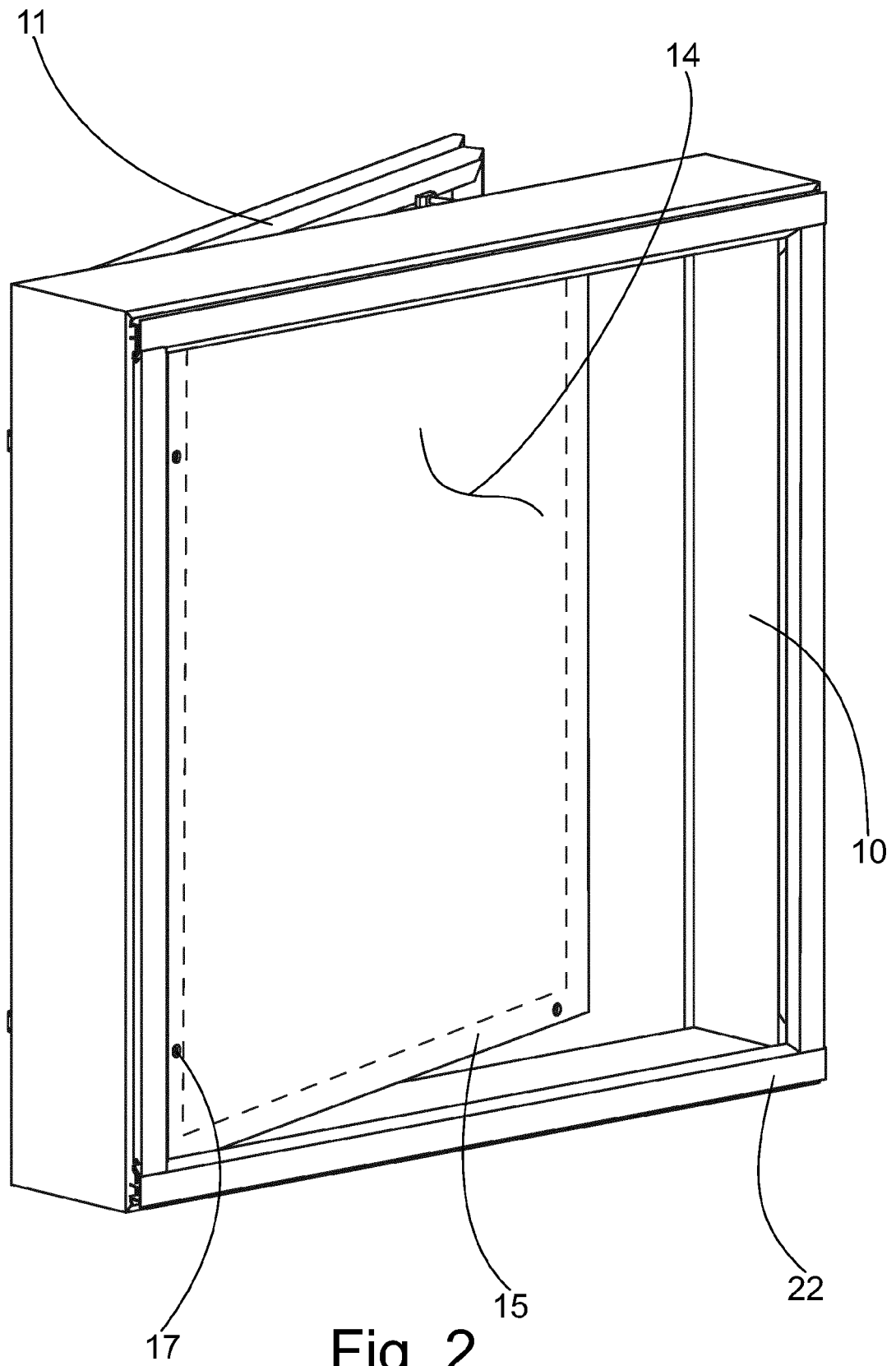


Fig. 2

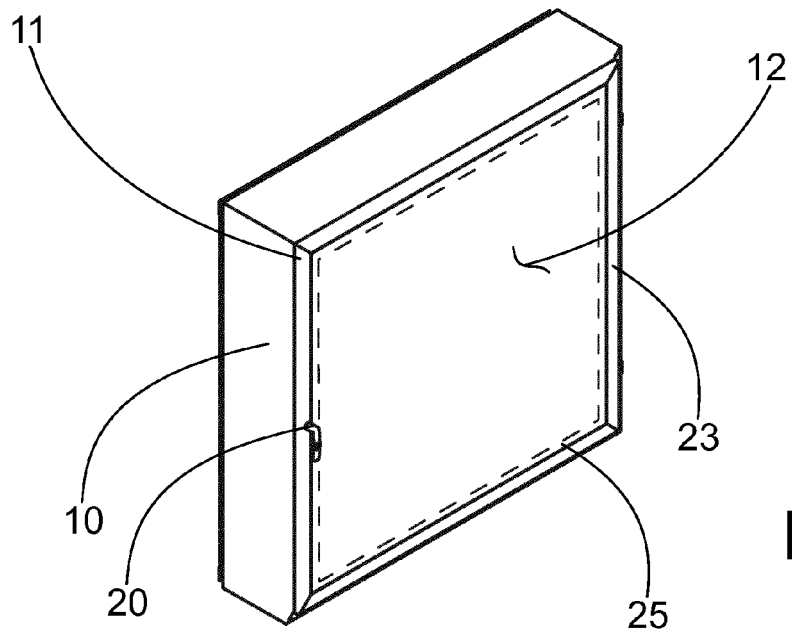


Fig. 3a

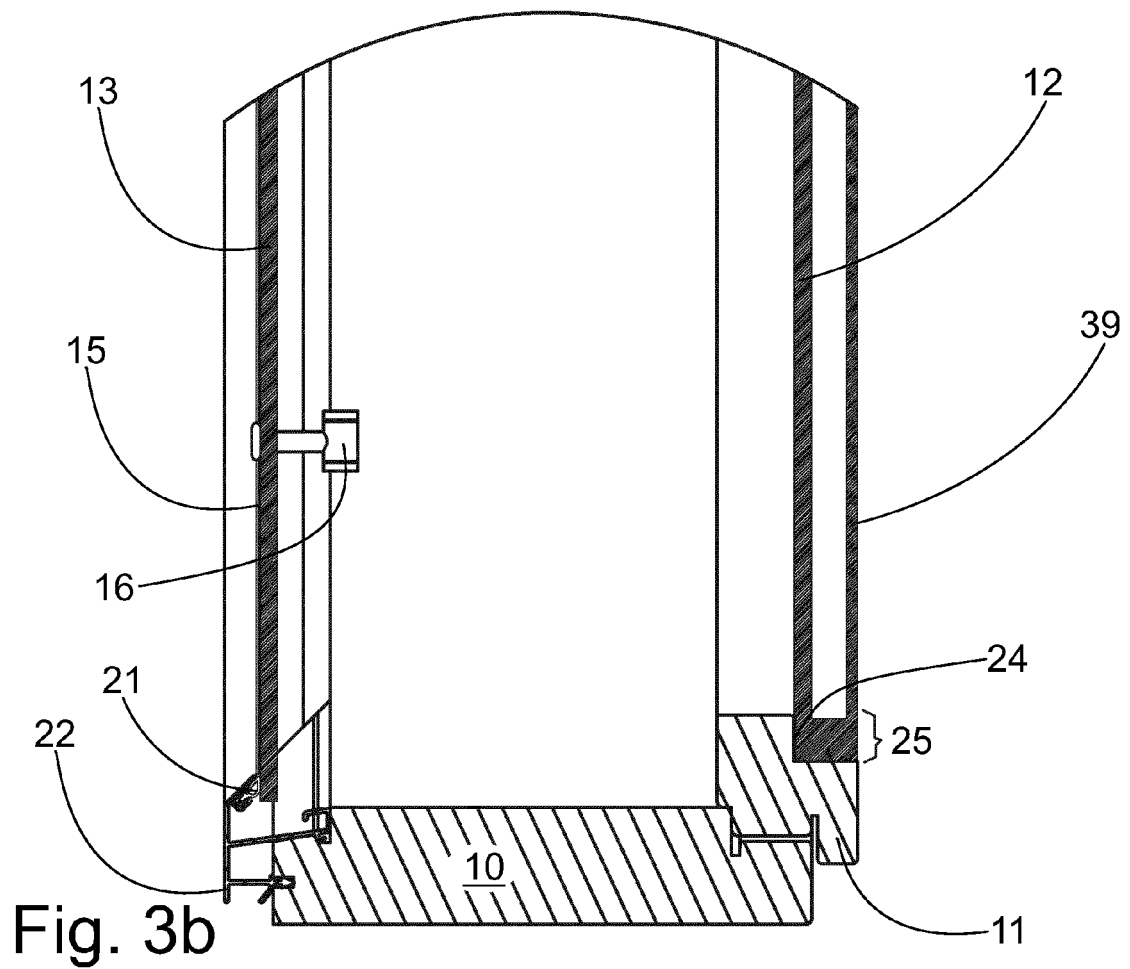
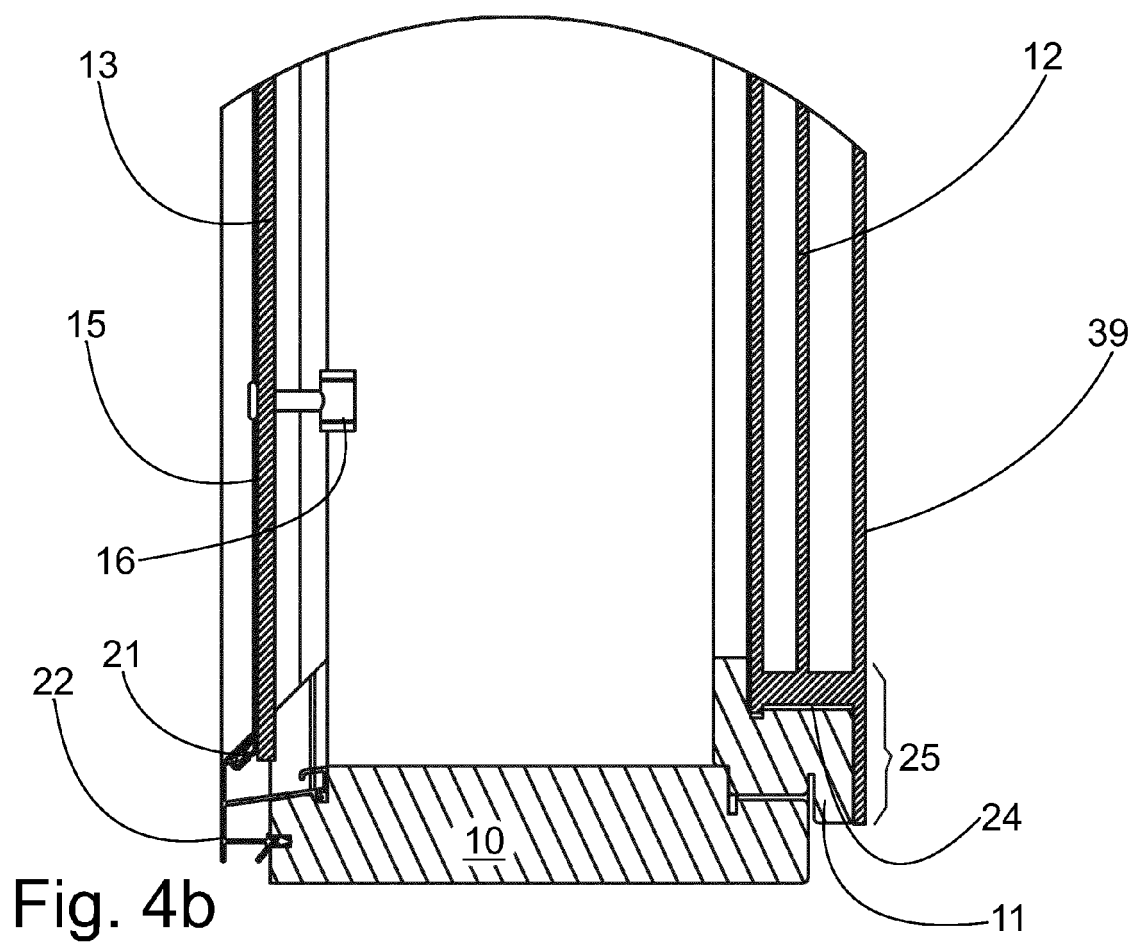
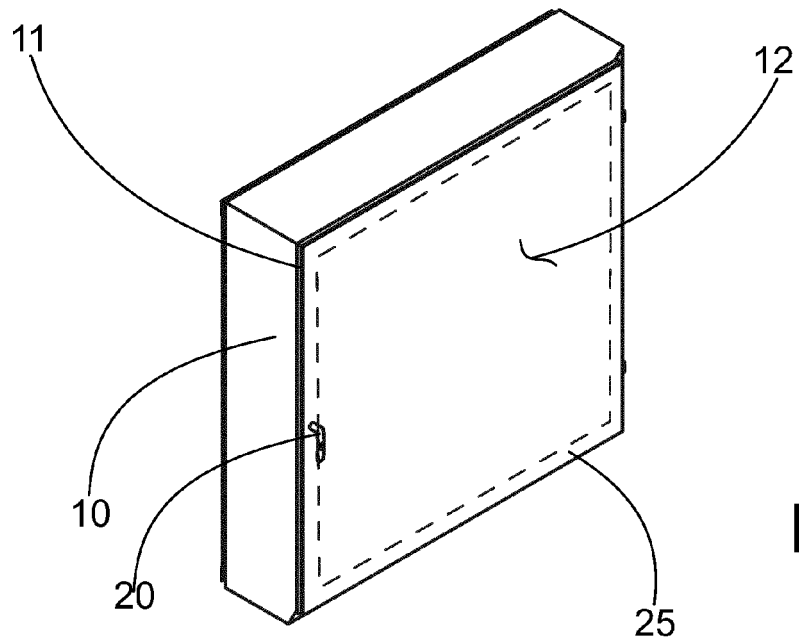
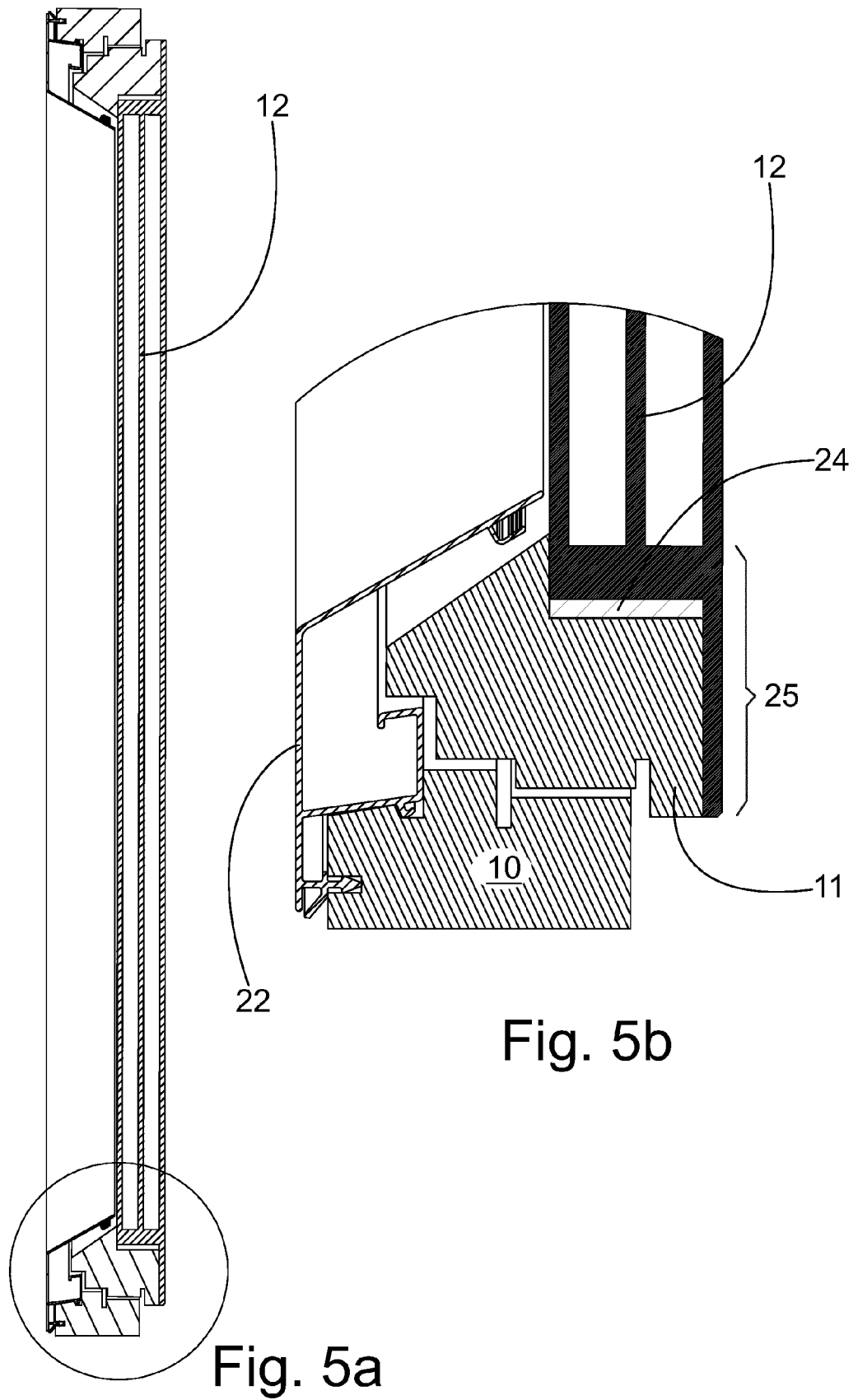
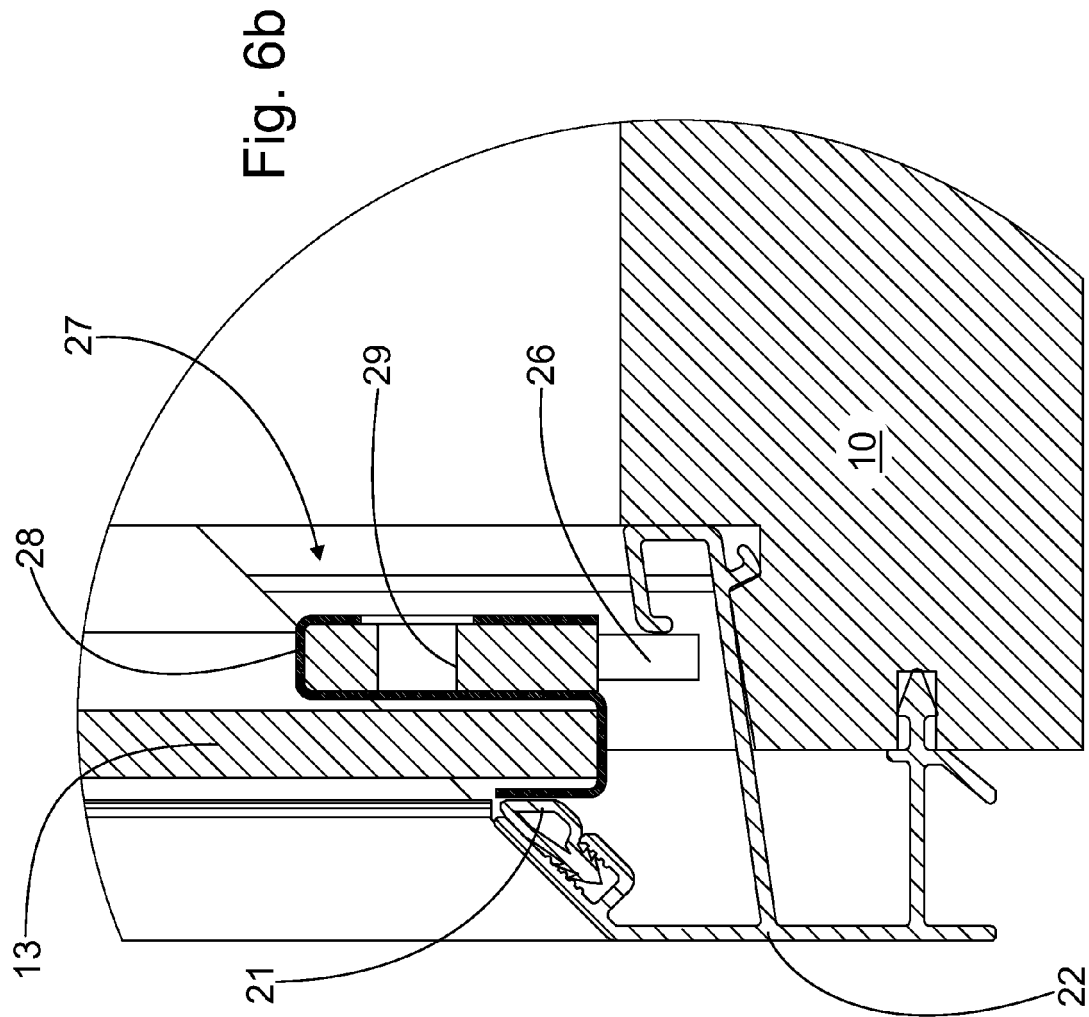
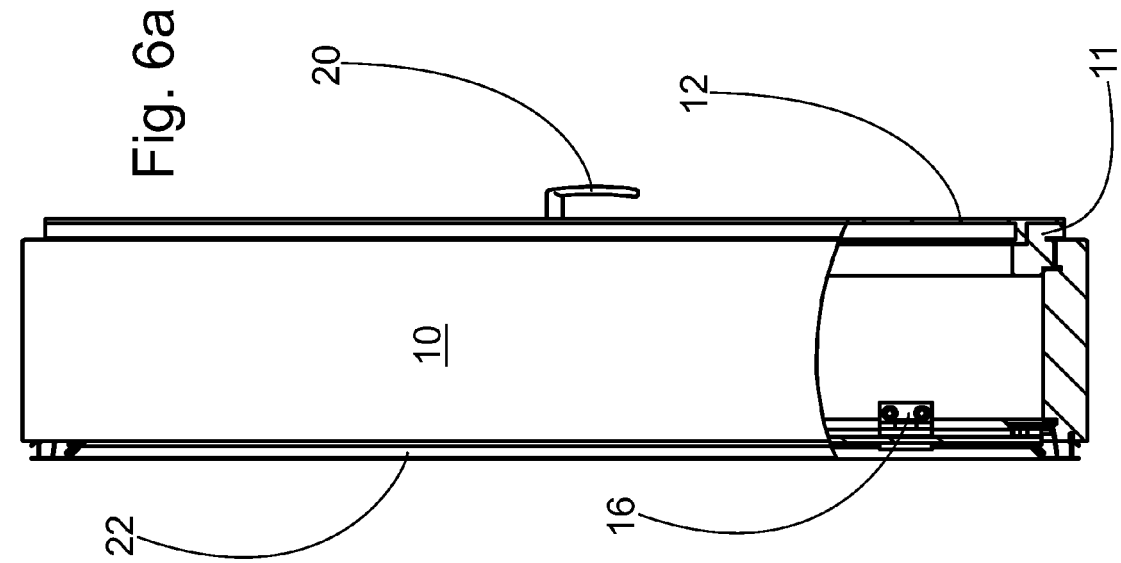


Fig. 3b







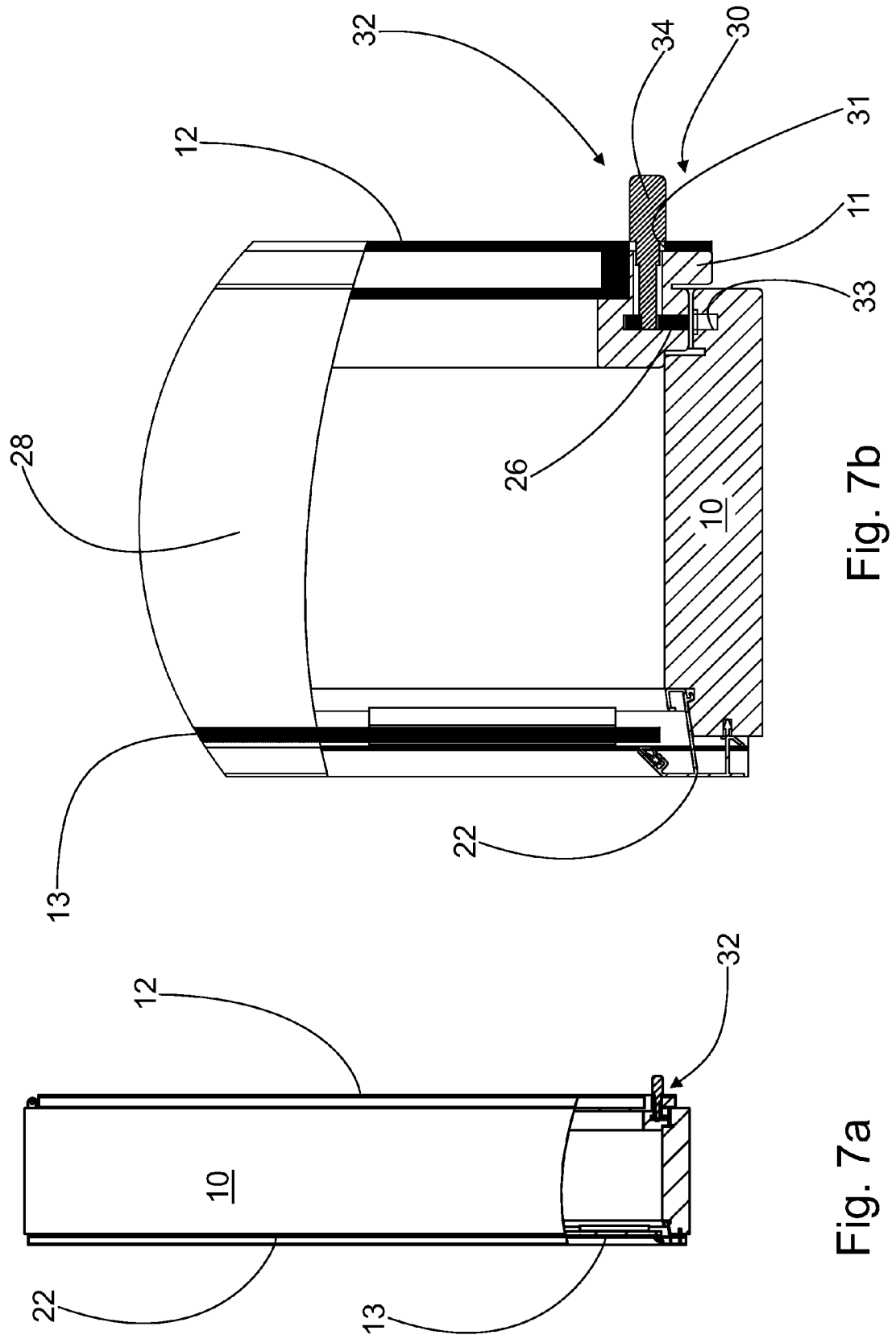


Fig. 7a

Fig. 7b

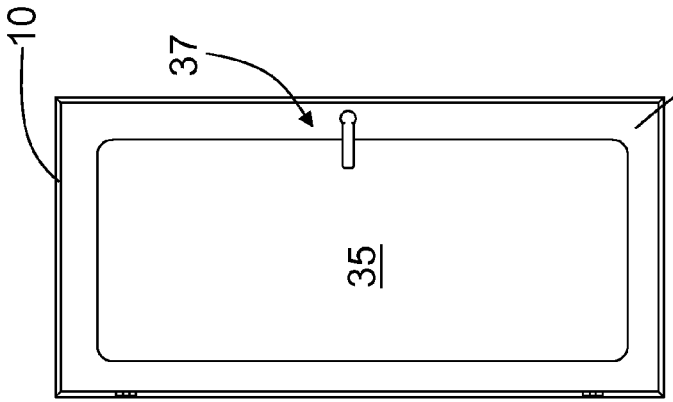
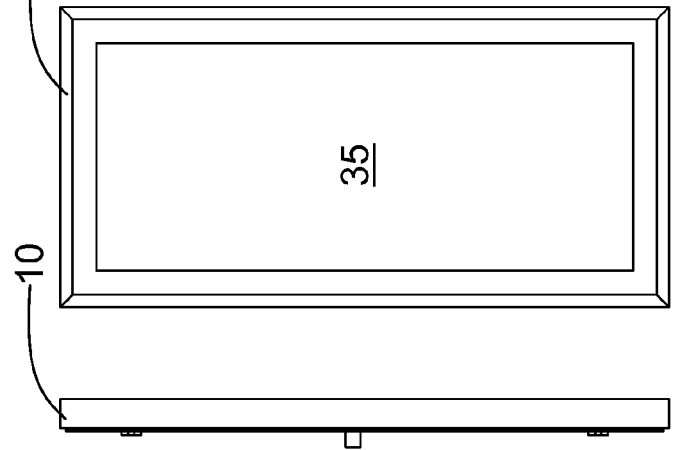
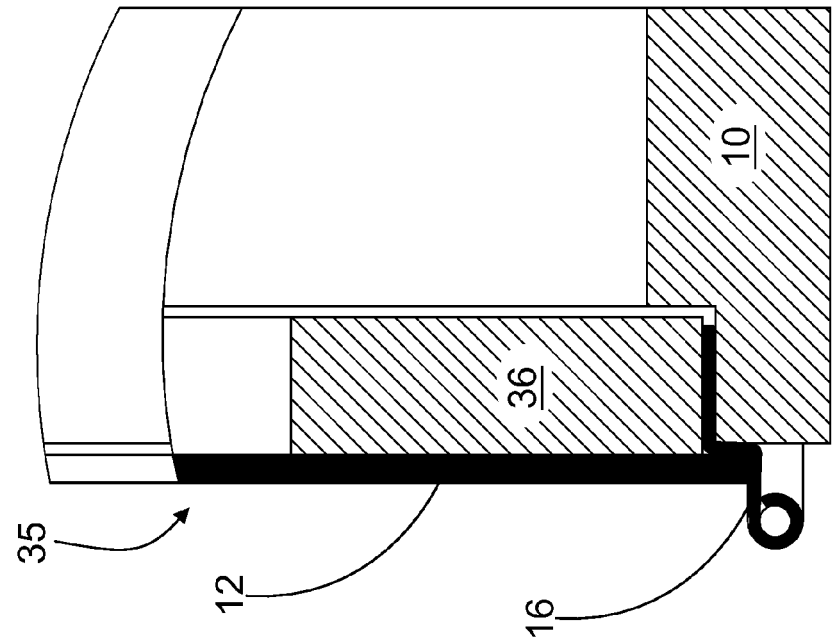
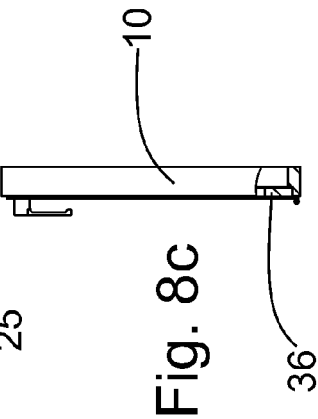
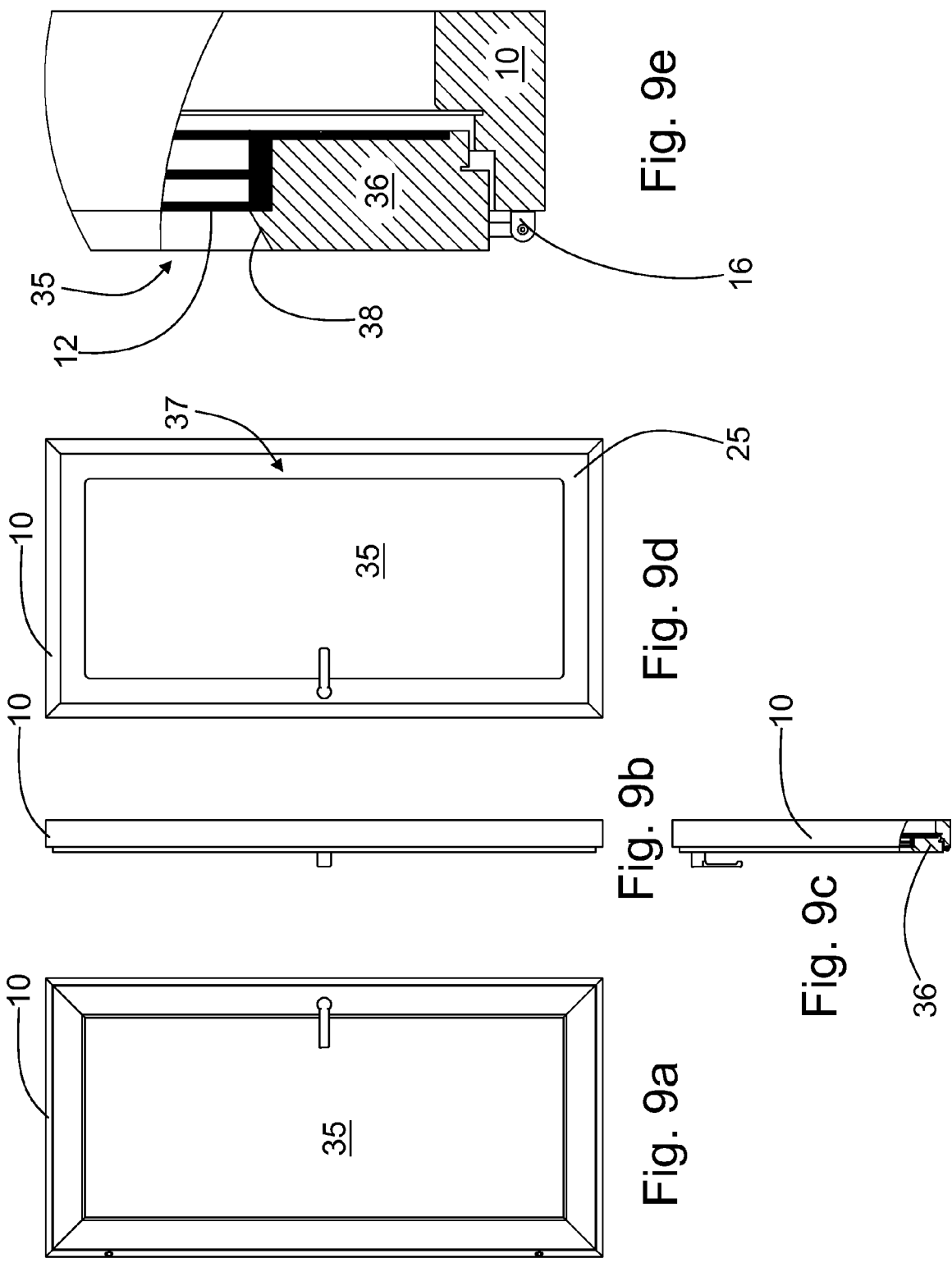


Fig. 8d

Fig. 8b

Fig. 8a







EUROPEAN SEARCH REPORT

Application Number
EP 14 18 3356

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DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	DE 197 09 938 A1 (WOSCHKO EMIL [DE]; WOSCHKO ROSA [DE]) 17 September 1998 (1998-09-17) * page 1, line 42 - page 4, line 63; figures 1,4 *	1-15	INV. E06B3/56 E06B3/66 E06B3/02 E06B3/54 E06B3/10 E06B3/26
X	DE 298 16 551 U1 (ISAL FENSTER UND FASSADENSYSTEME [CH]) 17 December 1998 (1998-12-17) * page 1, line 3 - page 2, line 14; figure 1 *	1-9	
X	DE 20 2005 018200 U1 (CR DESIGN GMBH BERN [CH]) 23 February 2006 (2006-02-23) * figure 3 *	1,4,8	
X	DE 299 13 001 U1 (RATIONAL EINBAUKUECHEN GMBH [DE]) 21 October 1999 (1999-10-21) * page 2, line 26 - line 28; figure 2 *	1,2,4	
A	WO 2005/018941 A1 (IND TECHNO LOGIC SOLUTIONS LTD [IL]; ERON GERA [IL]) 3 March 2005 (2005-03-03) * page 3, paragraph 2 *	5-7,15	TECHNICAL FIELDS SEARCHED (IPC) E06B
A	DE 101 38 731 A1 (AUG GUTTENDOERFER GMBH & CO [DE]) 6 March 2003 (2003-03-06) * paragraphs [0002], [0005], [0007], [0008], [0016], [0018]; figures 1-5 *	10-15	
A	FR 2 347 520 A1 (PERRACINO PIERRE [FR]) 4 November 1977 (1977-11-04) * figures 2,3 *	10-15	
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 3 February 2015	Examiner Jülich, Saskia
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

EPO FORM 1503 03.82 (P04C01)

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ON EUROPEAN PATENT APPLICATION NO.**

EP 14 18 3356

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The members are as contained in the European Patent Office EDP file on
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03-02-2015

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
DE 19709938 A1	17-09-1998	NONE	
DE 29816551 U1	17-12-1998	NONE	
DE 202005018200 U1	23-02-2006	NONE	
DE 29913001 U1	21-10-1999	NONE	
WO 2005018941 A1	03-03-2005	AT 453513 T	15-01-2010
		AT 467665 T	15-05-2010
		EP 1658342 A1	24-05-2006
		EP 1660325 A1	31-05-2006
		EP 2233539 A1	29-09-2010
		ES 2338332 T3	06-05-2010
		ES 2345985 T3	07-10-2010
		ES 2493065 T3	11-09-2014
		IL 173769 A	29-02-2012
		US 2007031603 A1	08-02-2007
		US 2008210122 A1	04-09-2008
		US 2012007930 A1	12-01-2012
		US 2013187983 A1	25-07-2013
		US 2013222498 A1	29-08-2013
		WO 2005018941 A1	03-03-2005
		WO 2005019360 A1	03-03-2005
DE 10138731 A1	06-03-2003	NONE	
FR 2347520 A1	04-11-1977	NONE	