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(54) **AN OVEN COMPRISING A DOOR**

OFEN, UMFASSEND EINE TÜR

FOUR MUNI D'UNE PORTE

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EP-A2- 1 106 932 WO-A2-2006/059303
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Description

[0001] The present invention relates to an oven comprising a door that has a panel which can be easily mounted and dismantled.

Various embodiments have been developed in order to decrease the heat losses in the oven doors and to keep the door under certain temperature values. In order that the temperature of the outer panel, which forms the door surface that contacts the outer environment, is decreased, the door comprises one or more panels, which are disposed such that there will be a certain distance between them and the outer panel. For disposing these panels into the door, connection methods such as using fixing elements, adhering and snap-fit are applied. Using detailed fixing elements for each panel increases both the number of parts and also the assembly time. Furthermore, the inner panel, which forms the oven door surface contacting the cooking chamber, is called "full glass" and completely covers the casing surface, which forms the door.

[0002] In the state of the art European Patent Application No EP1555486, the inner panel is assembled to the door by being slid.

[0003] In the state of the art US Patent Application US 2005/0076900 A1 an oven is described with a door comprising a casing disposed between an outer panel and an inner panel. A "C"-shaped portion of a bearing surrounds the lower edge of the inner panel and restricts its movement.

[0004] In the state of the art German Patent Application No DE102006013521, the inner panel is assembled to the door by a retaining member.

In all these embodiments, the inner panel is dismantled from the door either by being slid or after a retaining member is detached.

The aim of the present invention is the realization of an oven comprising a door that has a panel which can be easily mounted and dismantled and easily cleaned.

The oven realized in order to attain the aim of the present invention, explicated in the first claim and the respective claims thereof, comprises a bearing that limits the movement of the inner panel, which is located on the door and which is seated on the vertical profile upper wall, in the horizontal and vertical directions, and a first gap, in the vertical direction, that remains between the inner panel lower surface and the bearing, which is the continuation of the vertical profile. By means of the first gap, a distance, which is required for the inner panel to change to the inclined position, is formed and thus, the inner panel is enabled to be dismantled from the casing after being brought to the inclined position.

[0005] The oven comprises a base which is located on the door and which is the continuation of the vertical profile located on the bearing, and between which and the inner panel lower surface, the first gap is situated, and a vertical extension, against which the inner panel lower edge bears, and a horizontal extension, which is formed

by the vertical extension end being bent onto the inner panel. Since the length of the horizontal extension is shorter than the length of the base, a second gap remains between the horizontal extension end and the contact point of the vertical profile with the base. By means of the second gap, the inner panel is brought to a position that is almost vertical to the vertical profile and thus, the inner panel is provided to be easily dismantled from the vertical profile.

[0006] The oven comprises a housing which limits the movement of the inner panel by providing the inner panel to be stuck between the horizontal extension and the vertical profile, hence the casing, and which prevents the parallelism between the outer panel and the inner panel from deteriorating due to the stretching of the inner panel as a result of the high temperature occurring in the cooking chamber.

[0007] By means of the present invention, the assembly and the disassembly of the inner panel to the body can be performed in a safer and easier manner.

[0008] The oven realized in order to attain the aim of the present invention is illustrated in the attached figures, where:

Figure 1 - is the perspective view of an oven.

Figure 2 - is the perspective view of a door.

Figure 3 - is the perspective view of a casing.

Figure 4 - is the cross-sectional view of the door when the panels are mounted.

Figure 5 - is the view of detail D in Figure 4.

Figure 6 - is the cross-sectional view of the door during the dismantling of the inner panel.

Figure 7 - is the view of detail E in Figure 6.

Figure 8 - is the cross-sectional view of the door after the dismantling of the inner panel.

Figure 9 - is the view of detail F in Figure 8.

[0009] The elements illustrated in the figures are numbered as follows:

1. Oven
2. Cooking chamber
3. Door
4. Outer panel
5. Inner panel
6. Casing
7. Vertical profile
8. Horizontal profile
9. Bearing
10. Base
11. Horizontal extension
12. First gap
13. Second gap
14. Housing
15. Vertical extension

[0010] The oven (1) comprises a cooking chamber (2) wherein foods desired to be cooked are placed, a door

(3) which allows access to the cooking chamber (2), an outer panel (4) which is located on the door (3) and which forms the door (3) surface that contacts the outer environment, an inner panel (5) which forms the door (3) surface that contacts the cooking chamber (2), and a casing (6) which is located between the outer panel (4) and the inner panel (5), and on one side of which the outer panel (4) and on the other side of which the inner panel (5) are fixed such that they will be parallel to each other, and which has quadrangular and hollow vertical profiles (7) forming the side edges of the door (3) and a quadrangular and hollow horizontal profile (8) connecting the vertical profiles (7) to each other, and which is formed by joining the profiles (7 and 8) together in an upside-down "U"-form (Figure 1, Figure 2 and Figure 3).

[0011] The oven (1) comprises a bearing (9) which is located on the end of the vertical profile (7) and which has a "C"-shaped portion, and the "C"-shaped portion of which surrounds the lower edge of the inner panel (5) on the vertical profile (7) upper wall (UW) and thus, limits the movement of the inner panel (5) in the horizontal and vertical directions, and a first gap (12) which, in the vertical direction, remains between the inner panel (5) lower surface (T) and the bearing (9) portion that is situated on the continuation of the vertical profile (7). The depth of the first gap (12) is at least as much as the wall thickness of the vertical profile (7) (Figure 9).

[0012] The bearing (9) comprises a base (10) which is the continuation of the vertical profile (7), and between which and the inner panel (5) lower surface (T), the first gap (12) is situated, and a vertical extension (15) which is bent vertically to the base (10), and thus, against which the inner panel (5) lower edge bears, and a horizontal extension (11), which is formed by the vertical extension (15) end being bent onto the inner panel (5) in parallel with the base (10) and again vertically. The length of the horizontal extension (11) is shorter than the length of the base (10). Therefore, the oven (1) comprises a second gap (13) which remains between the horizontal extension (11) end and the contact point of the vertical profile (7) with the base (10) (Figure 9).

[0013] By means of the first gap (12), the inner panel (5) can be mounted onto the door (3) and easily dismounted from the door (3). The first gap (12) enables the inner panel (5) to be easily dismounted from the casing (6) by being brought to the inclined position without deforming the horizontal extension (11). By means of the first gap (12), a distance, required for the inner panel (5) to be able to change to the inclined position, is formed. By means of the second gap (13), the inner panel (5) is brought to a position that is almost vertical to the vertical profile (7) and thus, the inner panel (5) is provided to be dismounted from the vertical profile (7) without damaging the horizontal extension (11). In the situation wherein no gaps (12 and 13) are situated, more complicated mechanisms are required to be used for the inner panel (5) to be dismounted from the door (3).

[0014] The oven (1) comprises a housing (14) which

is located on the door (3) and between the horizontal extension (11) and the vertical profile (7) upper wall (UW), and wherein the inner panel (5) is disposed. The horizontal extension (11) partially covers the edge and the upper surface (S) of the inner panel (5) and provides the inner panel (5) to be stuck between the horizontal extension (11) and the vertical profile (7), hence the casing (6), and thus, both limits the movement of the inner panel (5), and prevents the parallelism between the outer panel (4) and the inner panel (5) from deteriorating due to the stretching of the inner panel (5) as a result of the high temperature occurring in the cooking chamber (2) (Figure 4, Figure 5 and Figure 6).

[0015] The assembly of the panels (4 and 5) to the door (3) is performed as follows: The outer panel (4) is fixed onto the casing (6) such that the outer panel (4) will overlap with the lower surface of the vertical profiles (7) forming the casing (6). Then, the inner panel (5) is seated into the bearing (9) in an inclined manner such that the lower edge of the inner panel (5) will enter the housing (14). In this situation, the inner panel (5) is in the inclined position and there is an angle between itself and the vertical profile (7). After that, the inner panel (5) is brought to the horizontal position such that it will be completely seated on the upper wall (UW) of the vertical profile (7), and is fixed onto the casing (6). In this situation, the lower edge of the inner panel (5) is in the housing (14) and pressure is applied on the inner panel (5) by the horizontal extension (11) (Figure 4 and Figure 5). When the inner panel (5) is desired to be detached from the door (3), the following method is performed: The inner panel (5) is dismounted from the vertical profile (7) from its upper edge. In this situation, due to the first gap (12) and the second gap (13), the inner panel (5) stands inclined such that there will be a certain angle between itself and the vertical profile (7), and bears against the end of the horizontal extension (11) (Figure 6 and Figure 7). When the inner panel (5) is pulled, it can be easily dismounted from the vertical profile (7), hence from the casing (6) and the door (3) (Figure 8 and Figure 9).

[0016] In an embodiment of the present invention, the length difference between the horizontal extension (11) and the base (10), that is, the second gap (13) is at least equal to the first gap (12).

[0017] In another embodiment of the present invention, the length difference between the horizontal extension (11) and the vertical extension (15) is almost equal to the thickness of the inner panel (5). Thus, while the inner panel (5) is detached, it can be brought to a position that is almost vertical to the vertical profile (7).

[0018] In another embodiment of the present invention, the vertical extension (15) is longer than the horizontal extension (11).

[0019] In an embodiment of the present invention, the bearing (9) is produced as one piece with the vertical profile (7).

[0020] In yet another embodiment of the present invention, the bearing (9) is produced from plastic material.

The bearing (9) is an intermediary element which is concentrically mounted onto the vertical profile (7).

[0021] By means of the present invention, the assembly of the inner panel (5) to the door (3) and the disassembly of the inner panel (5) from the door (3) are easily performed.

[0022] It is to be understood that the said present invention is not limited to the embodiments disclosed above and an expert in the technique can easily introduce different embodiments. These different embodiments should be considered within the scope of the claims of the present invention, too.

Claims

1. An oven (1) comprising:

- a cooking chamber (2) wherein foods desired to be cooked are placed,
- a door (3) which allows access to the cooking chamber (2),
- an outer panel (4) which is located on the door (3) and which forms the door (3) surface that contacts the outer environment,
- an inner panel (5) which forms the door (3) surface that contacts the cooking chamber (2) and which has an interior surface (T) that faces the outer panel (4),
- a casing (6) which is located between the outer panel (4) and the inner panel (5), and on one side of which the outer panel (4) and on the other side of which the inner panel (5) are fixed such that they will be parallel to each other, and which has quadrangular and hollow first profiles (7) forming the side edges of the door (3) and a quadrangular and hollow second profile (8) connecting the first profiles (7) to each other, and which is formed by joining the profiles (7 and 8) together in a "U"-form, wherein the first profiles (7) are oriented vertically and the second profile is oriented horizontally and the "U"-form is oriented upside-down when the door (3) is in a closed and vertical position,
- a bearing (9) which is located on the end of the first profile (7) and which has a "C"-shaped portion, and the "C"-shaped portion of which surrounds a first edge of the inner panel (5) and thus limits the movement of the inner panel (5), wherein the first edge is the lower edge of the inner panel (5) when the door (3) is in a closed and vertical position,

characterized in that

the bearing (9) comprises a base (10) which is the continuation of the first profile (7), and between which and the inner panel (5) interior surface (T) a first gap (12) is situated, and a first extension (15)

which is bent vertically to the base (10) and against which the inner panel (5) first edge bears, and a second extension (11), which is formed by the first extension (15) end being bent onto the inner panel (5) in parallel with the base (10), wherein the first gap (12) enables the inner panel (5) to be easily dismounted from the casing (6) by being brought to an inclined position with respect to the inner panel (5).

2. An oven (1) as in Claim 1, **characterized by** the first gap (12), the depth of which is at least as much as the wall thickness of the first profile (7).
3. An oven (1) as in Claim 1 or 2, **characterized by** the second extension (11) which is shorter than the base (10).
4. An oven (1) as in Claim 3, **characterized by** the state that the length difference between the second extension (11) and the base (10) is equal at least to the first gap (12).
5. An oven (1) as in Claim 3, **characterized by** the state that the length difference between the second extension (11) and the first extension (15) is almost equal to the thickness of the inner panel (5).
6. An oven (1) as in Claim 3, **characterized by** the first extension (15) which is longer than the second extension (11).
7. An oven (1) as in Claim 1, **characterized by** the bearing (9) which is produced as one piece with the first profile (7).
8. An oven (1) as in Claim 1, **characterized by** the bearing (9) which is produced from plastic material.

Patentansprüche

1. Ofen (1), umfassend

- eine Garungskammer (2), in die zuzubereitende Lebensmittel gegeben werden,
- eine Tür (3), die Zugriff auf die Garungskammer (2) gestattet,
- eine Außenblende (4), die an der Tür (3) angeordnet ist und die Fläche der Tür (3) bildet, die mit der Außenumgebung in Kontakt steht,
- eine Innenblende (5), die die Fläche der Tür (3) bildet, die in Kontakt mit der Garungskammer (2) steht und eine Innenfläche (T) aufweist, die der Außenblende (4) zugewandt ist,
- ein Gehäuse (6), das zwischen der Außenblende (4) und der Innenblende (5) angeordnet ist und auf dessen einer Seite die Außenblende (4) und auf dessen anderer Seite die Innenblende

(5) befestigt ist, derart, dass sie parallel zueinander sind, und die quadratische und hohle erste Profile (7) aufweist, die die Seitenkanten der Tür (3) bilden, und ein quadratisches und hohles zweites Profil (8), das die ersten Profile (7) miteinander verbindet und das durch Zusammenfügen der Profile (7 und 8) in einer "U"-Form gebildet ist, wobei die ersten Profile (7) vertikal ausgerichtet sind und das zweite Profil horizontal ausgerichtet ist und die "U"-Form umgekehrt ausgerichtet ist, wenn die Tür (3) in einer geschlossenen und vertikalen Stellung ist,

- ein Lager (9), das am Ende des ersten Profils (7) angeordnet ist und einen "C"-förmigen Abschnitt aufweist und dessen "C"-förmiger Abschnitt eine erste Kante der Innenblende (5) umgibt und dadurch die Bewegung der Innenblende (5) einschränkt, wobei die erste Kante die untere Kante der Innenblende (5) ist, wenn die Tür (3) in einer geschlossenen und vertikalen Stellung ist,

dadurch gekennzeichnet, dass

das Lager (9) eine Basis (10), die die Fortsetzung des ersten Profils (7) ist und zwischen welcher und der Innenfläche (T) der Innenblende (5) ein erster Spalt (12) liegt, und eine erste Verlängerung (15), die vertikal zur Basis (10) gebogen ist und an der die erste Kante der Innenblende (5) anliegt, und eine zweite Verlängerung (11) aufweist, die gebildet ist, indem das Ende der ersten Verlängerung (15) parallel zur Basis (10) auf die Innenblende (5) gebogen ist, wobei der erste Spalt (12) es der Innenblende (5) ermöglicht, leicht vom Gehäuse (6) demontiert zu werden, indem es in Bezug auf die Innenblende (5) in eine geneigte Stellung gebracht wird.

2. Ofen (1) nach Anspruch 1, **dadurch gekennzeichnet, dass** die Tiefe des ersten Spalts (12) wenigstens der Wanddicke des ersten Profils (7) entspricht.
3. Ofen (1) nach Anspruch 1 oder 2, **dadurch gekennzeichnet, dass** die zweite Verlängerung (11) kürzer als die Basis (10) ist.
4. Ofen (1) nach Anspruch 3, **gekennzeichnet durch** den Zustand, dass die Längendifferenz zwischen der zweiten Verlängerung (11) und der Basis (10) wenigstens gleich dem ersten Spalt (12) ist.
5. Ofen (1) nach Anspruch 3, **gekennzeichnet durch** den Zustand, dass die Längendifferenz zwischen der zweiten Verlängerung (11) und der ersten Verlängerung (15) nahezu gleich der Dicke der Innenblende (5) ist.
6. Ofen (1) nach Anspruch 3, **dadurch gekennzeichnet, dass** die erste Verlängerung (15) länger als die

zweite Verlängerung (11) ist.

7. Ofen (1) nach Anspruch 1, **dadurch gekennzeichnet, dass** das Lager (9) einstückig mit dem ersten Profil (7) hergestellt ist.
8. Ofen (1) nach Anspruch 1, **dadurch gekennzeichnet, dass** das Lager (9) aus Kunststoffmaterial hergestellt ist.

Revendications

1. Un four (1) comprenant

- une chambre de cuisson (2) dans lequel les aliments à cuire sont placés,
- une porte (3) permettant l'accès dans la chambre de cuisson (2),
- un panneau extérieur (4) qui est situé sur la porte (3) et qui forme la surface de la porte (3) en contact avec l'extérieur,
- un panneau intérieur (5) qui forme la surface de la porte (3) en contact avec la chambre de cuisson (2) et qui présente une surface intérieure (T) faisant face au panneau extérieur (4),
- un boîtier (6) qui est situé entre le panneau extérieur (4) et le panneau intérieur (5), sur un côté duquel le panneau extérieur (4) est fixé et sur l'autre côté duquel le panneau intérieur (5) est fixé de telle sorte qu'ils sont parallèles l'un à l'autre et qui présente des premiers profilés quadrangulaires et creux (7) formant les bords latéraux de la porte (3) et un deuxième profilé quadrangulaire et creux (8) reliant les premiers profilés (7) l'un à l'autre, et qui est formé par joignant les profilés (7 et 8) dans une forme de "U", où les premiers profilés (7) sont orientés verticalement et le deuxième profilé est orienté horizontalement et la forme de "U" est orienté à l'envers lorsque la porte (3) est dans une position fermée et verticale,
- un palier (9) qui est situé sur l'extrémité du premier profilé (7) et qui présente une partie en forme de "C", et la partie en forme de "C" duquel entoure un premier bord du panneau intérieur (5) et donc limite le mouvement du panneau intérieur (5), où le premier bord est le bord inférieur du panneau intérieur (5) lorsque la porte (3) est dans une position fermée et verticale,

caractérisé en ce que

le palier (9) comprend une base (10) qui est la suite du premier profilé (7), et entre laquelle et la surface intérieure (T) du panneau intérieur (5) un premier espace (12) est situé, et une première extension (15) qui est pliée verticalement à la base (10) et sur laquelle le premier bord du panneau intérieur (5) s'app

puie, et une deuxième extension (11) qui est formée en pliant l'extrémité de la première extension (15) sur le panneau intérieur (5) en parallèle à la base (10), où le premier espace (12) permet au panneau intérieur (5) d'être démonté facilement du boîtier (6) en étant passé à une position inclinée par rapport au panneau intérieur (5). 5

2. Un four (1) selon la Revendication 1, **caractérisé par** le premier espace (12) dont la profondeur est au moins égale à l'épaisseur de paroi du premier profilé (7). 10
3. Un four (1) selon la Revendication 1 ou 2, **caractérisée par** la deuxième extension (11) qui est plus courte que la base (10). 15
4. Un four (1) selon la Revendication 3, **caractérisé en ce que** la différence de longueur entre la deuxième extension (11) et la base (10) est égale au moins au premier espace (12). 20
5. Un four (1) selon la Revendication 3, **caractérisé en ce que** la différence de longueur entre la deuxième extension (11) et la première extension (15) est presque égale à l'épaisseur du panneau intérieur (5). 25
6. Un four (1) selon la Revendication 3, **caractérisé par** la première extension (15) qui est plus longue que la deuxième extension (11). 30
7. Un four (1) selon la Revendication 1, **caractérisé par** le palier (9) qui est produit comme une pièce avec le premier profilé (7). 35
8. Un four (1) selon la Revendication 1, **caractérisé par** le palier (9) qui est produit en plastique. 40

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50

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Figure 1

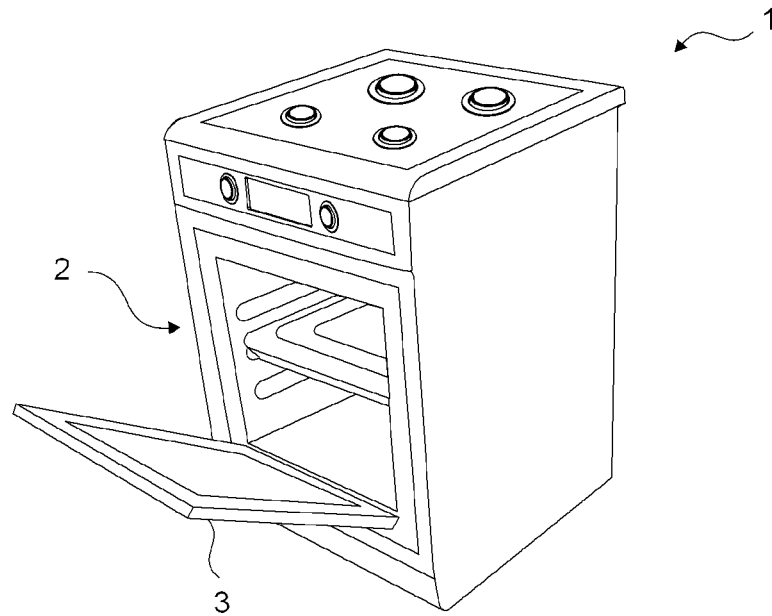


Figure 2

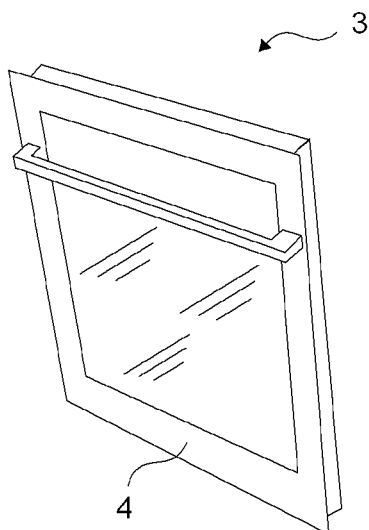


Figure 3

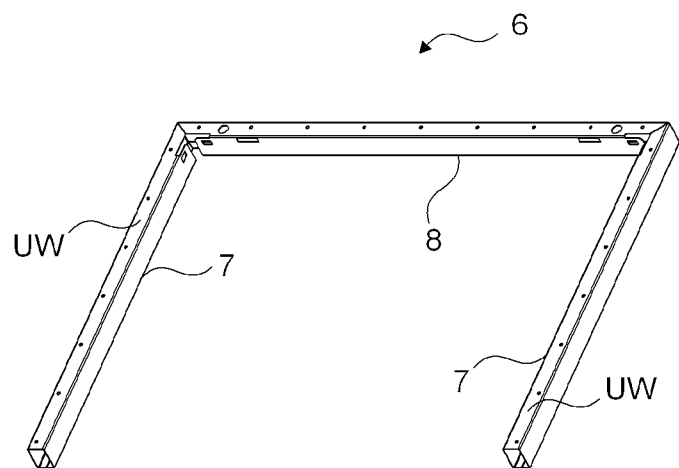


Figure 4

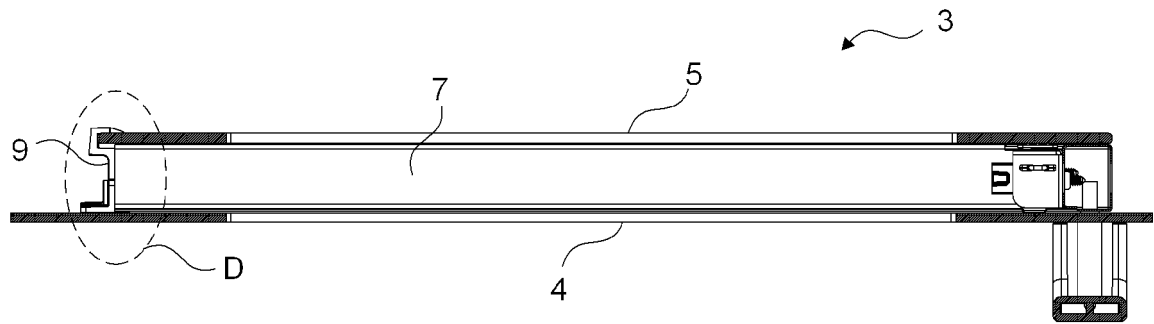


Figure 5

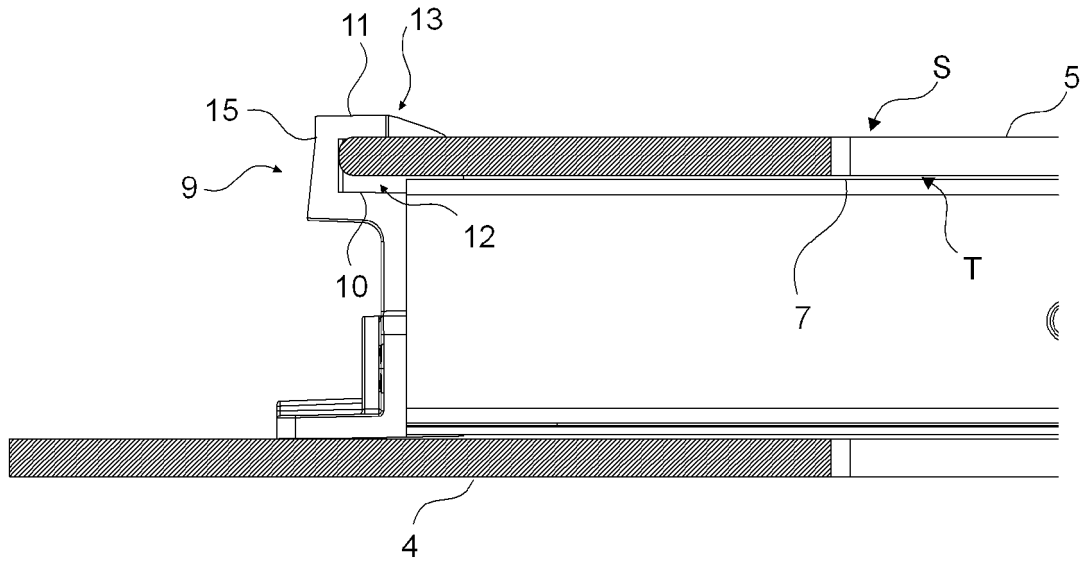


Figure 6

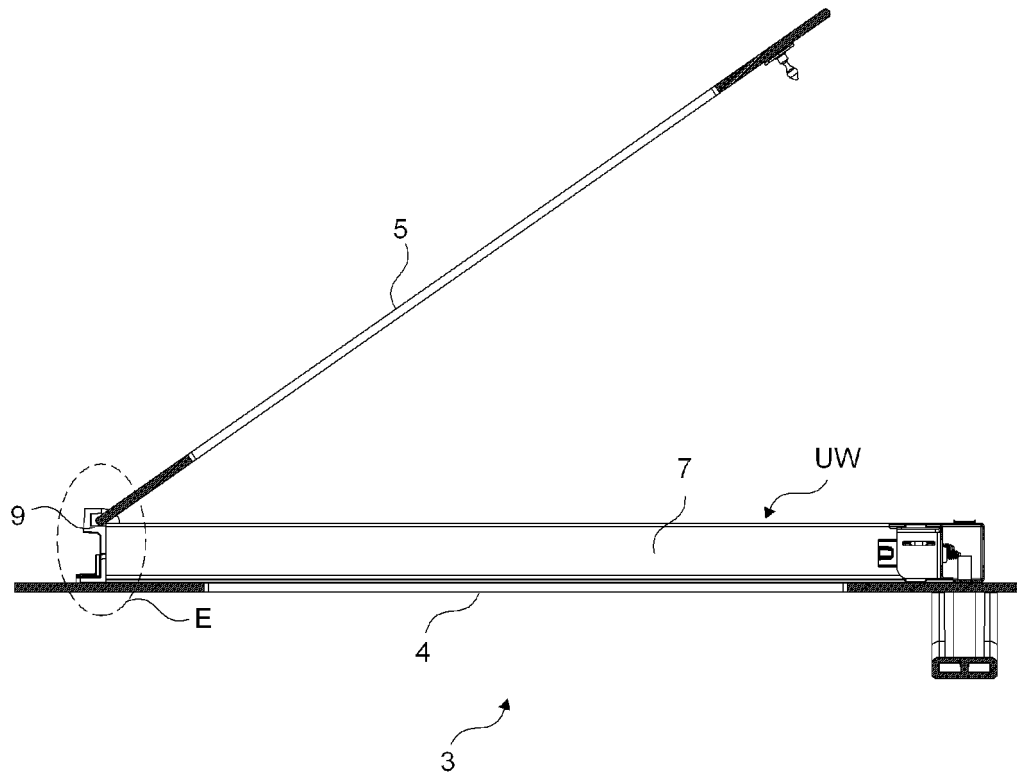


Figure 7

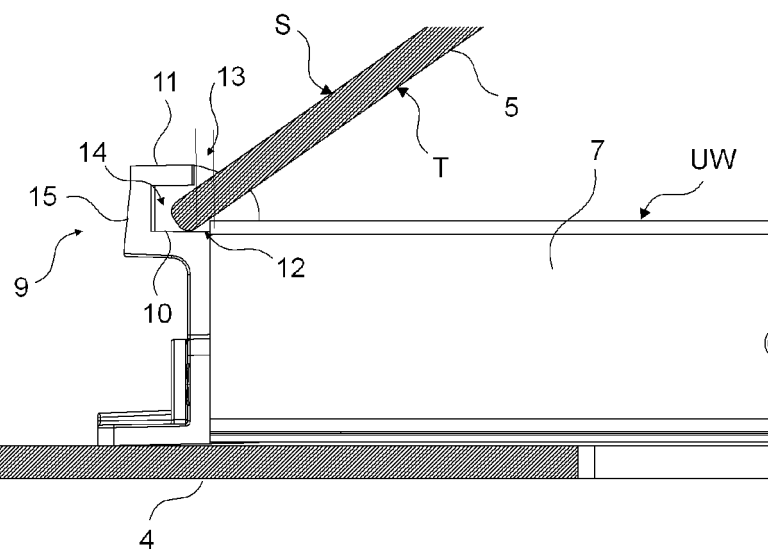


Figure 8

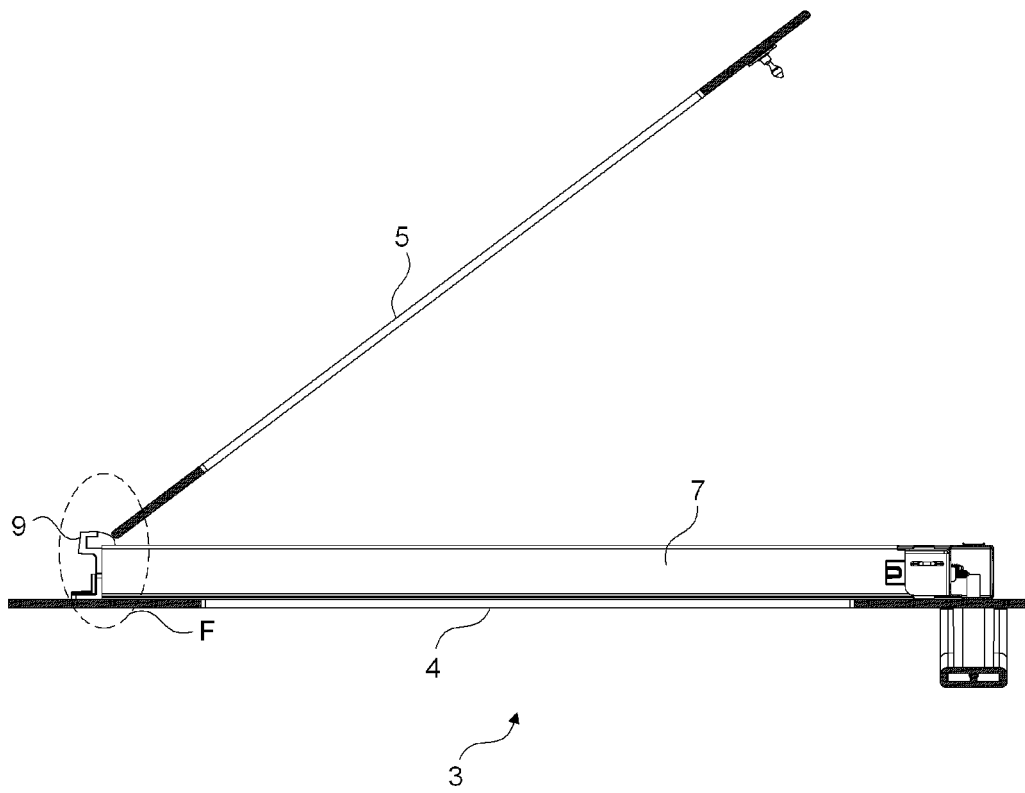
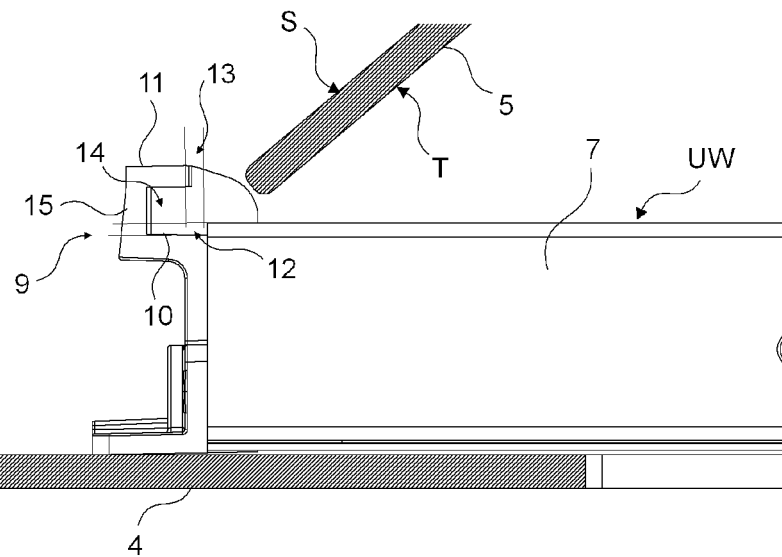


Figure 9



REFERENCES CITED IN THE DESCRIPTION

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