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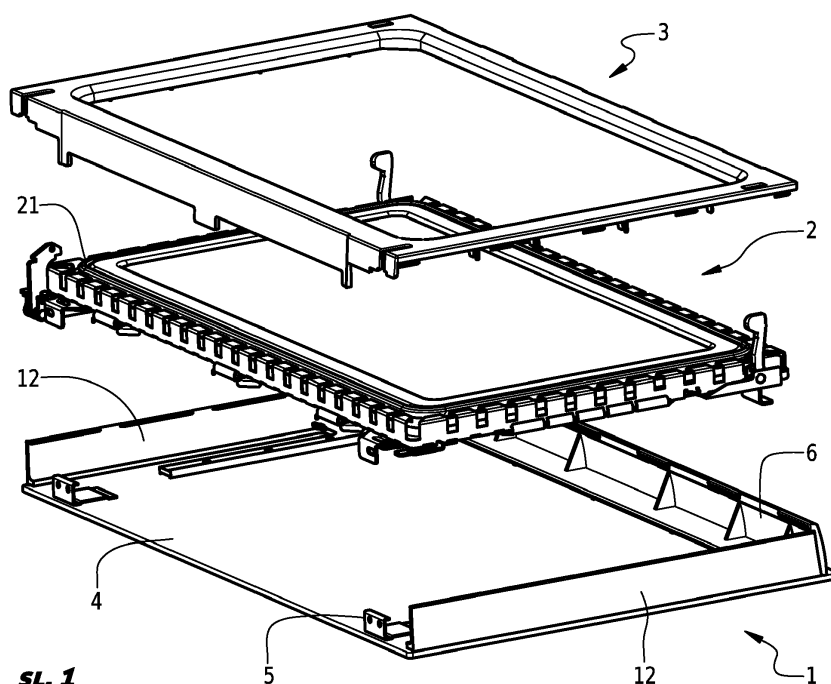
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(54) DOOR OF A MULTIFUNCTIONAL OVEN AND/OR A MICROWAVE OVEN

(57) The present invention refers to a door of a multifunctional oven with microwave heating function and/or a microwave oven, said door comprise an outer panel with a transparent or a translucent plate, at least two walls directly fixed to the inner side of the outer transparent or translucent plate, a wave choke and a cover of said wave choke. In the area of the first longitudinal edge of the transparent or translucent plate (4) and at the side facing

the interior of the door there is attached at least one carrier (5) for fixing the microwave choke (2). The opposite second longitudinal edge of the transparent or translucent plate (4) is provided with an air guide (6). The outer panel (1) additionally comprises transversal walls (12) facing the interior of the door, each of said walls extending in the area of each translucent edge of the plate (4).



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Description

[0001] The present invention refers to a door of a multifunctional oven with microwave heating function and/or a microwave oven, said door comprise an outer panel with a transparent or a translucent plate, at least two walls directly fixed to the inner side of the outer transparent or translucent plate, a wave choke and a cover of said wave choke.

[0002] An oven door for a microwave oven or a multifunctional oven with microwave heating function of the aforementioned kind is known from the publication of the patent application No. EP 2 731 404 A1, for example. Due to the recent overall requirement for the outer glass panel of the door to be felt cold at least so far that the safety regulations are fulfilled, the door must be appropriately cooled. Said door disclosed in EP 2 731 404 A1 are built in a manner that it can not allow cooling of the outer glass panel by means of the forced air flow.

[0003] It is the object of the present invention to create a structural simple door of a multifunctional oven with microwave heating function and/or a door of a microwave oven which remedies drawbacks of the know solution.

[0004] According to the present invention, the object as set above is solved by features set forth in the characterising part of claim 1. Detail of the invention is disclosed in respective subclaims.

[0005] The invention is further described in detail by way of non-limiting embodiment, and with a reference to the accompanying drawings, where

- Fig. 1 shows an exploded three-dimensional view of a door of a multifunctional oven according to the invention,
- Fig. 2 shows a three-dimensional view of a transversal wall of the outer panel,
- Fig. 3 shows an enlarged detail of the door of Fig. 1 with omitted transversal wall,
- Fig. 4 shows a cross-sectional view of an air guide through the line IV of Fig. 3,
- Fig. 5 shows a cross-sectional view of an air guide through the line V of Fig. 3,
- Fig. 6 shows a three-dimensional view of a wave choke cover,
- Fig. 7 shows a partial three-dimensional view of a wave choke.

[0006] A door of a multifunctional oven with microwave heating function and/or a microwave oven in general is comprised of an outer panel 1, a microwave choke 2 and a cover 3 of the microwave choke 2 joined together in an integrated structure. Said outer panel 1 is preferably selected as a transparent or translucent plate 4, in particular a glass plate, wherein at least one carrier and preferably at least two carriers 5 configured to accommodate the microwave choke 2 are fixed in the area of a first longitudinal edge of the glass plate 4 and at the side facing the interior of the door. Said carriers 5 are connected with

the glass plate 4 by means of an adhesion agent, for instance. Similar, a second longitudinal edge of the glass plate 4 lying opposite to said first longitudinal edge is provided at the side of the plate 4 facing the interior of the door with an air guide 6, which is attached to the glass plate 4 by means of an adhesive agent. Optionally, a door handle can be attached to a glass plate 4 at the end associated with said air guide 6 and at the side facing away from the interior of the door. In such a case the air guide 6 and said handle are fixed by means of fixing means, preferably by means of a detachable connection means and more preferably by means of a detachable screw connection. Optionally, in said instance the air guide 6 can be additionally fixed to the glass plate 4 by means of an adhesive agent. The air guide 6 is preferably produced of a plastic material.

[0007] Said air guide 6 resembles in the cross section thereof approximately an L-shape, wherein legs 7, 8 of L-shaped air guide 6 are interconnected by multiple reinforcing ribs 9. The first leg 7 of air guide 6 is placed on said glass plate 4 at the side thereof facing the interior of the door, whereas the second leg 8 extends approximately perpendicularly to the first leg 7 towards the interior of the door. The free end of said second leg 8 is formed in the longitudinal direction thereof with a plurality of blocking means 10 configured to cooperate with counter-blocking means 11 formed on the side of said cover 3 of the wave choke 2 that mesh with said free end of the second leg 8. Said blocking means 10 and said counter-blocking means 11 build a form-locking joint such as a snap joint similar to mortise and tenon for example, where first of the blocking means 10, 11 is formed as a receptacle and the second of the blocking means 10, 11 is formed as a projection.

[0008] Furthermore, said outer panel 1 comprises two transversal walls 12 each extending in the area of each transversal edge of the glass plate 4, wherein said walls 12 are attached at the side of the glass plate 4 facing the interior of the door and by means of an adhesion agent to said glass plate 4. Each wall 12 resembles in the cross section thereof an approximate L-shape, a first leg 13 of the wall 12 being configured to be attached by means of said adhesion connection to the glass plate 4 of the outer panel 1, whereas a second leg 14 of the wall 12 being configured for a detachable connection with said cover 3 of the microwave choke 2. To this extent, the free edge of the second leg 14 of the wall 12 is formed with a plurality of blocking means 15 such as projections for example, extending appropriately in parallel to the glass plate 4 and in the direction towards the interior of the door and, respectively, towards the other wall 12. Said plurality of the blocking means 15 is configured to engage with a plurality of counter-blocking means 16 such as projections for instance, provided at the corresponding longitudinal edges of the cover 3 of the microwave choke 2. With the present embodiment, the blocking means 15 of the wall 12 are uniformly arranged in longitudinal direction of the wall 12, so that between each neighbouring

blocking means 15 a gap 15' is available. Similarly, the counter-blocking means 16 are uniformly arranged at the corresponding longitudinal edges of the cover 3 of the microwave choke 2, so that each counter-blocking means 16 can engage the blocking means 15 through said gaps 15'.

[0009] In principle, the microwave choke 2 is a known device preventing microwaves to escape during operation of the household apparatus. With the door assembled, the microwave choke 2 is covered with said cover 3, wherein the microwave choke 2 and the cover 3 are detachably connected by means of a plurality of blocking means 17 arranged along at least one edge of the microwave choke 2 and extending approximately in the plane of the microwave choke 2, and a plurality of counter-blocking means 18 arranged along the corresponding at least one edge of the cover 3. The microwave choke 2 is attached to the glass plate 4 by means of at least two holders 19 arranged in a corner area of the microwave choke 2 and at the side facing the air guide 6. Said at least two holders 19 cooperate with respective at least two receptacles 20 formed in each utmost longitudinal area of said air guide 6.

[0010] As aforesaid, the cover 3 of the microwave choke 2 comprises blocking means 11 which, one one hand, represent guides for correct placement of the cover 3 into the air guide 6, and on the other hand, serve for the force-locking joint and for the form-locking joint of the cover 3 with the air guide 6.

[0011] Furthermore, it is provided according to the present invention that said free end of said second leg 8 of the air guide 6 is formed in the longitudinal direction thereof with a plurality of elongated cut-outs 21 each of them arranged in the area between the two neighbouring blocking means 10. Said cover 3 is formed at the side thereof provided with counter-blocking means 11 formed with a plurality of additional elongated cut-outs 22 each of them arranged in the area between the two neighbouring counter-blocking means 11. The depth of said cut-outs 21, 22 extends in the plane of the door so that with the assembled door each pair of the cut-outs 21, 22 forms an opening 23 for cooling air flow.

[0012] Assembling of the door of the multifunctional oven and/or microwave oven according to the invention starts with placing said carriers 5 of the microwave choke 2 and said transversal walls 12 onto the glass plate 4, preferably by means of the adhesion agent. The aforementioned step is followed by fixing the air guide 6 to the glass plate 4, together with the door handle. Optionally, the adhesion agent is additionally used to attach said air guide.

[0013] Further, door hinges are fixed and and a gasket 24 are placed onto the microwave choke 2, and afterwards the microwave choke 2 is covered by said cover 3. Said counter-blocking means 18 of the cover 3 engage in a snap-lock manner with said blocking means 17 of the microwave choke 2.

[0014] Afterwards, said assembled unit of the cover 3

and the microwave choke 2 is placed onto the glass plate 4 which is provided with said transversal wall 12. Said plurality of the counter-blocking means 16 on the cover 3 travels through said gaps 15' at the free end of the second leg 14 of the wall 12. When said unit of the cover 3 and the microwave choke 2 is eventually positioned on the wall 12 and the counter-blocking means 16 of the cover 3 have entirely passed said gaps 15', said unit of the cover 3 and the microwave choke 2 is pushed in the door plane in the direction towards the air guide 6. The blocking means 10 provided on the air guide 6 engage the counter-blocking means 11 formed on said cover 3 of the microwave choke 2. The final push of the unit of the cover 3 and the microwave choke 2 towards the air guide 6 creates a detachable form-locking joint between said blocking means 10 and the counter-blocking means 11.

Claims

1. A door of a multifunctional oven with microwave heating function and/or a microwave oven, said door comprise an outer panel with a transparent or a translucent plate, at least two walls directly fixed to the inner side of the outer transparent or translucent plate, a wave choke and a cover of said wave choke, **characterized in that** said door comprises

- an outer panel (1) preferably selected as a transparent or a translucent plate (4), wherein at least one carrier (5) configured to accommodate the microwave choke (2) is fixed in the area of a first longitudinal edge of the glass plate (4) and at the side facing the interior of the door, wherein an opposite second longitudinal edge of the glass plate (4) is provided with an air guide (6), and wherein outer panel (1) further comprises two transversal walls (12) facing the interior of the door, each said wall (12) extending in the area of each transversal edge of the glass plate (4),
- a microwave choke (2), and
- a cover (3) of the microwave choke (2),

that are joined together into an integrated structure.

2. A door according to claim 1, **characterized in that** each wall (12) resembles an approximate L-shape, a first leg (13) of the wall (12) being configured to be attached to the glass plate (4) of the outer panel (1), whereas a second leg (14) of the wall (12) being configured for a detachable connection with said cover (3) of the microwave choke (2).

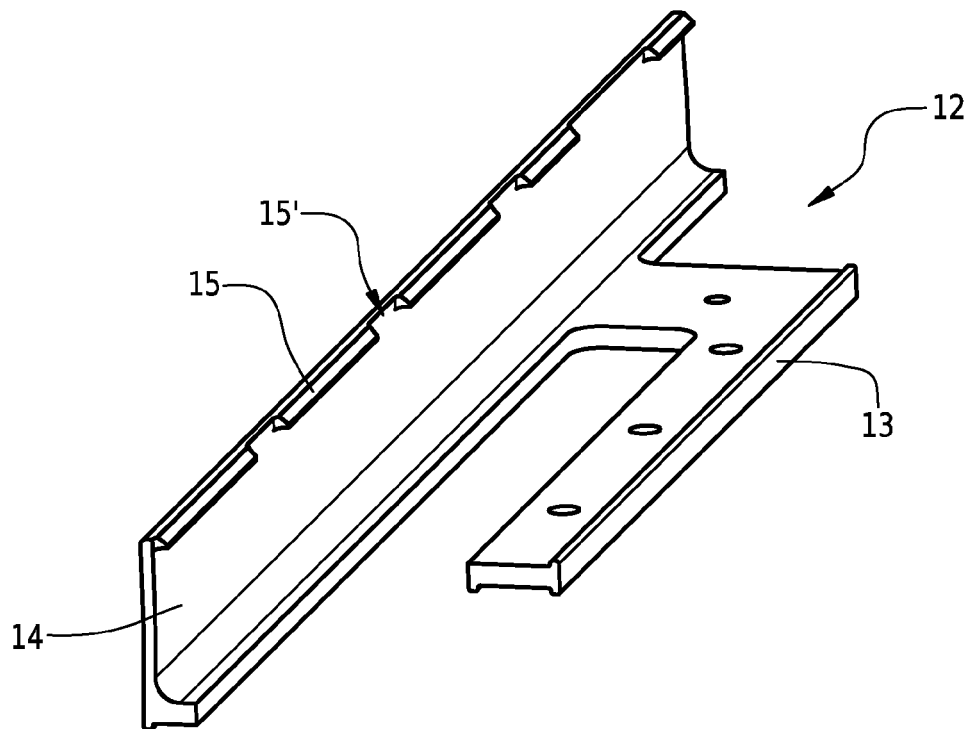
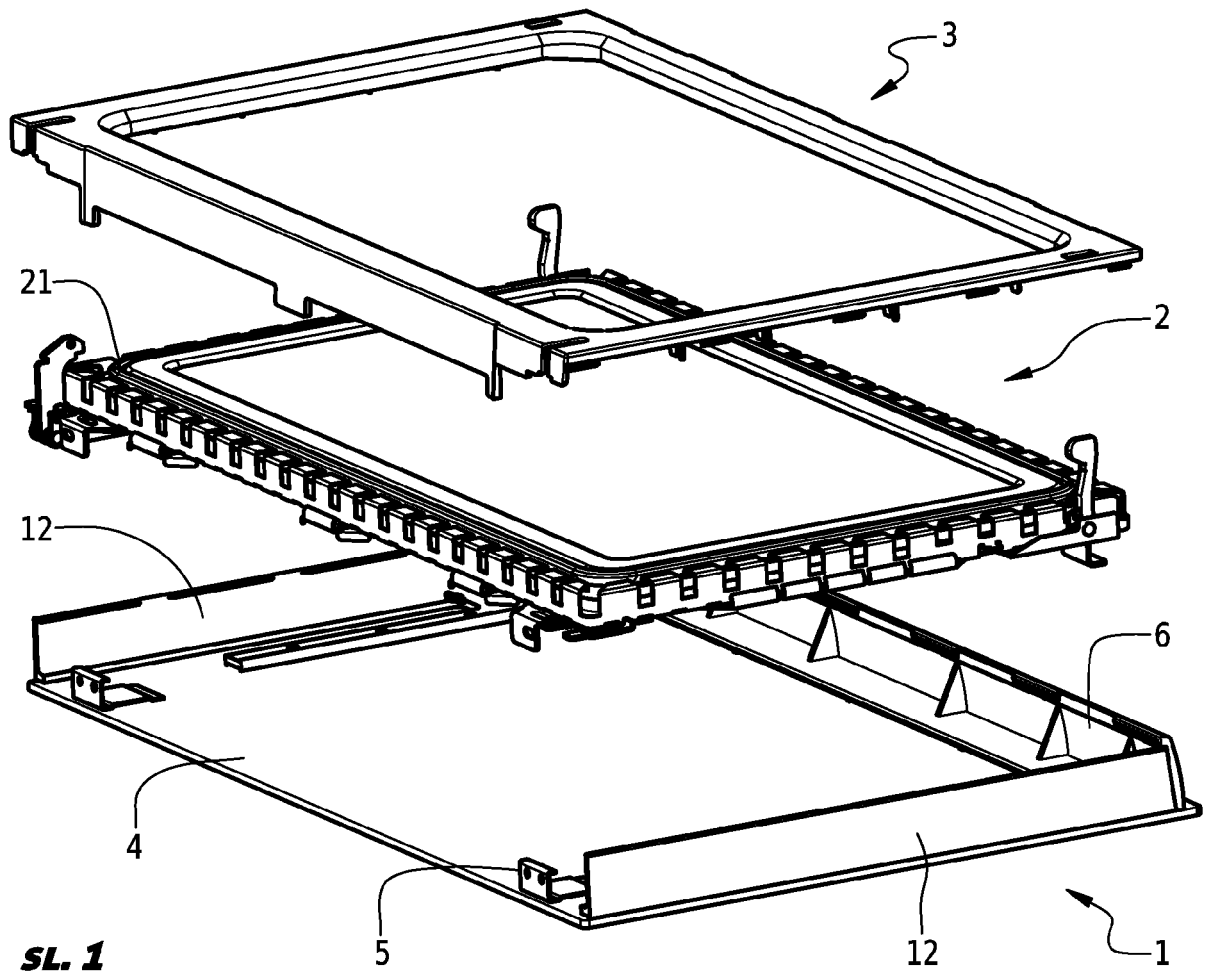
3. A door according to claims 1 and 2, **characterized in that** a free end of the second leg (14) of the wall (12) is formed with a plurality of blocking means (15)

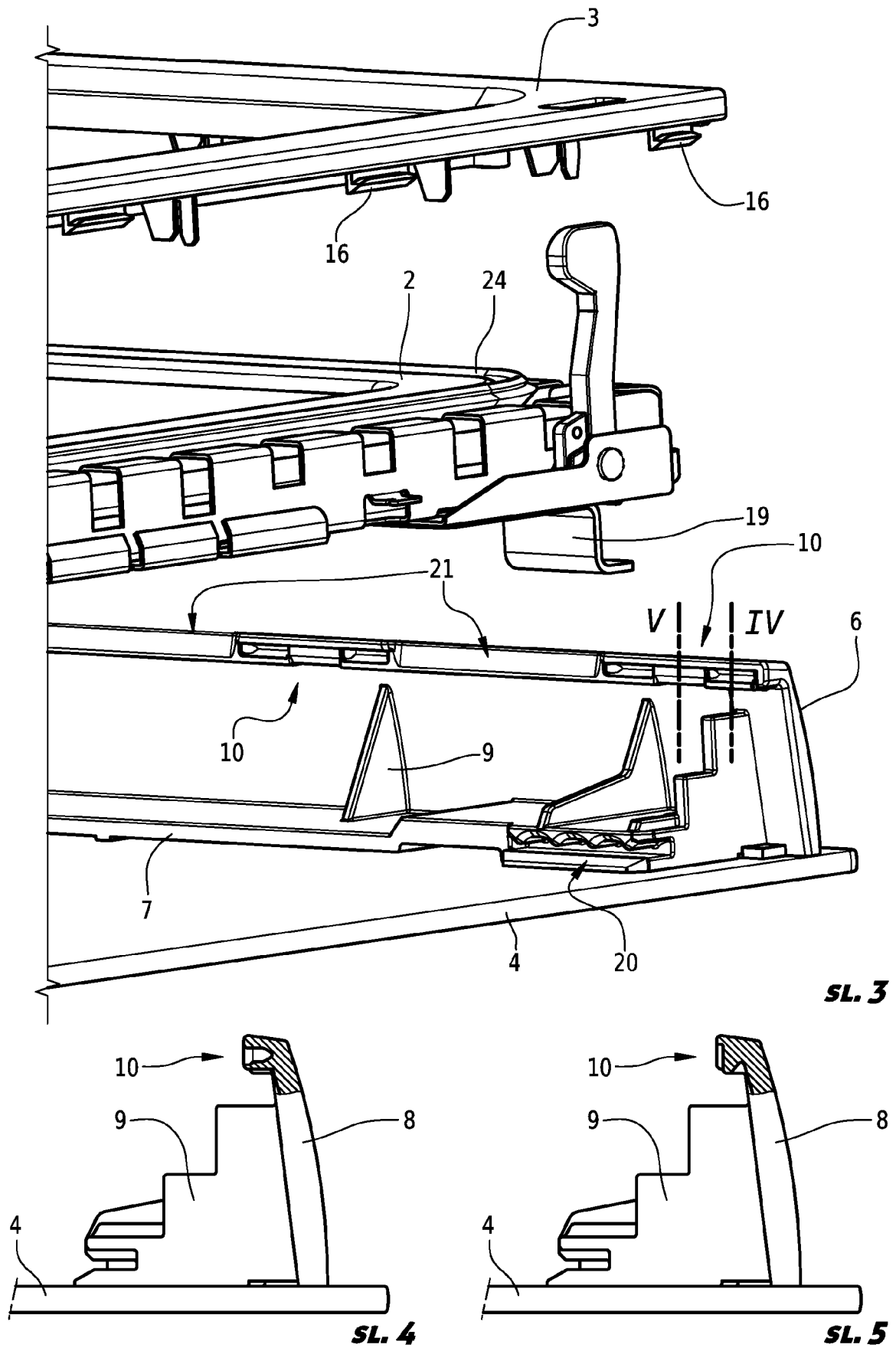
provided to engage with a plurality of counter-blocking means (16) provided at the corresponding longitudinal edges of the cover (3) of the microwave choke (2), wherein a gap (15') is available between each neighbouring blocking means (15).

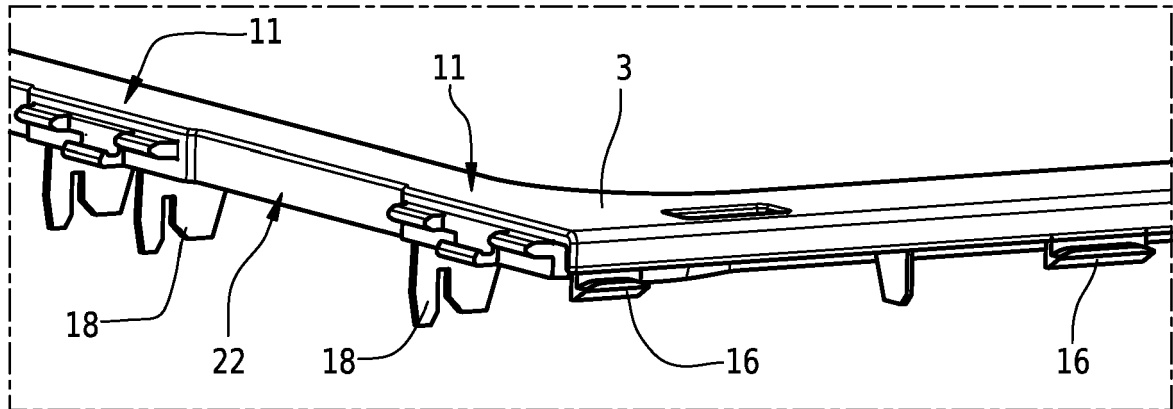
4. A door according to any of the preceding claims, **characterized in that** said carriers (5) and said walls (12) are connected with the transparent or translucent plate (4) by means of an adhesion agent. 10
5. A door according to any of the preceding claims, **characterized in that** said air guide (6) comprises a first leg (7) placed on said transparent or translucent plate (4) at the side thereof facing the interior of the door, and a second leg (8) extending approximately perpendicularly to the first leg (7) towards the interior of the door, wherein a free end of said second leg (8) is formed in the longitudinal direction thereof with a plurality of blocking means (10) configured to cooperate with counter-blocking means (11) formed on said cover (3) of the wave choke (2). 15 20
6. A door according to claim 5, **characterized in that** said blocking means (10) and said counter-blocking means (11) form a detachable form-locking joint. 25
7. A door according to claims 5 and 6, **characterized in that** said detachable form-locking joint is selected as snap joint in a manner of mortise and tenon, where first of the blocking means (10, 11) is formed as a receptacle and the second of the blocking means (10, 11) is formed as a projection. 30
8. A door according to any of the preceding claims, **characterized in that** the microwave choke (2) and the cover (3) are detachably joined by means of a plurality of blocking means (17) arranged along at least one edge of the microwave choke (2) and a plurality of counter-blocking means (18) arranged along the corresponding at least one edge of the cover (3). 35 40
9. A door according to any of the preceding claims, **characterized in that** the microwave choke (2) is attached to the transparent or translucent plate (4) by means of at least two holders (19) arranged in a corner area of the microwave choke (2) and at the side facing the air guide (6), said at least two holders (19) cooperating with respective at least two receptacles (20) formed in each utmost longitudinal area of said air guide (6). 45 50
10. A door according to any of the preceding claims, **characterized in that** the door (3) of the microwave choke (2) comprises the counter-blocking means (11) provided for guiding the cover (3) and for the force-locking joint and the form-locking joint of the 55

unit the cover (3) - microwave choke (2) with the air guide (6).

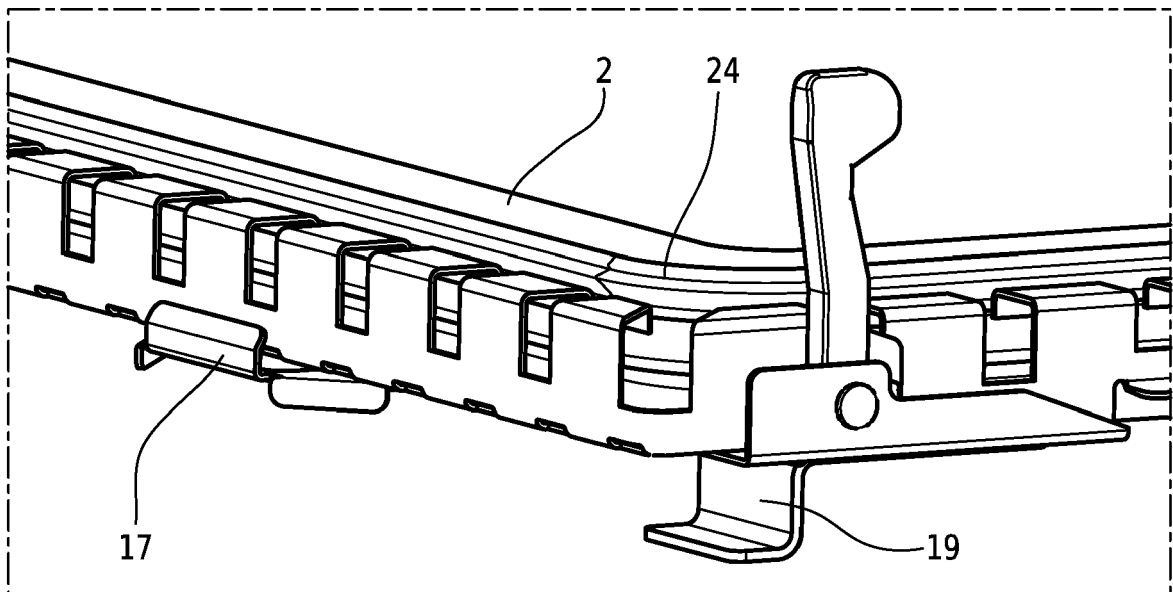
11. A door according to any of the preceding claims, **characterized in that** the free end of said second leg (8) of the air guide (6) is formed in the longitudinal direction thereof with a plurality of elongated cut-outs (21) each of them arranged in the area between the two neighbouring blocking means (10). 5
12. A door according to any of the preceding claims, **characterized in that** said cover (3) is formed at the side thereof provided with counter-blocking means (11) with a plurality of additional elongated cut-outs (22) each of them arranged in the area between the two neighbouring counter-blocking means (11). 10 15
13. A door according to any of the preceding claims, **characterized in that** the depth of said cut-outs (21, 22) extends in the plane of the door so that each pair of the cut-outs (21, 22) forms an opening (23) for cooling air flow. 20



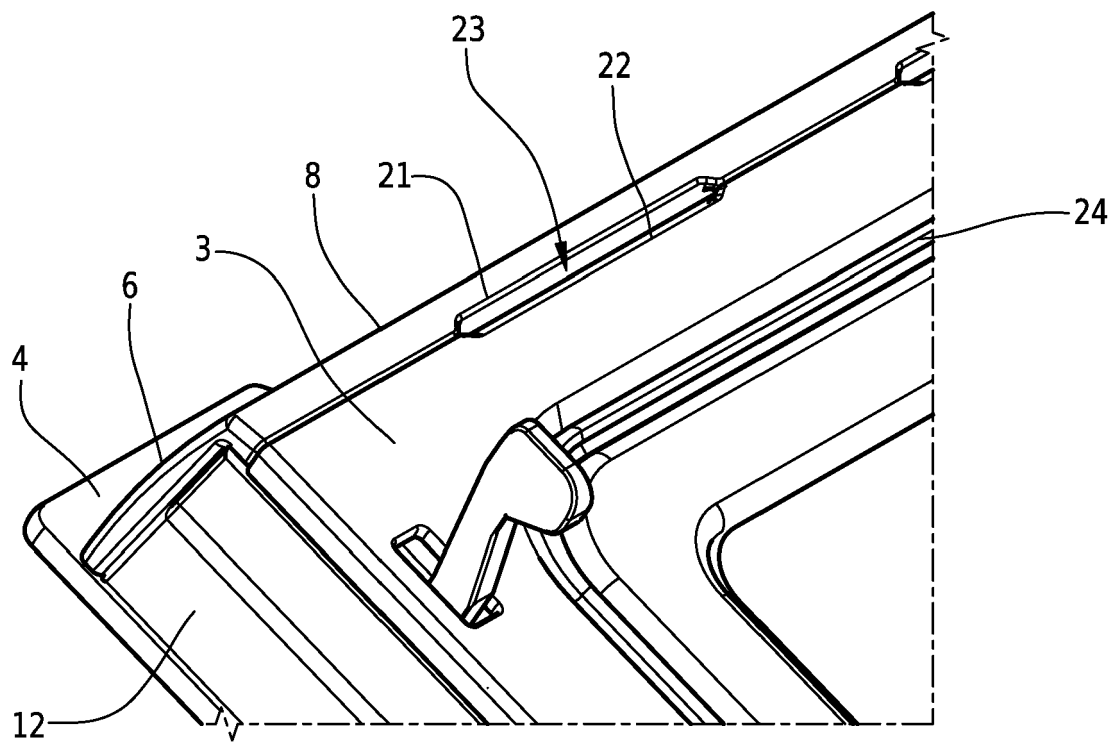




SL. 6



SL. 7



SL. 8



EUROPEAN SEARCH REPORT

Application Number
EP 18 15 3357

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			TECHNICAL FIELDS SEARCHED (IPC)
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The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 15 June 2018	Examiner Garcia, Jesus
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**ANNEX TO THE EUROPEAN SEARCH REPORT
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5 This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
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15-06-2018

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