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(54) COOKING OVEN WITH A DOOR

BACKOFEN MIT EINER TÜR

FOUR DE CUISSON AVEC UNE PORTE

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Description

[0001] The present invention relates to a cooking oven with an oven door and a cooling system for the oven door of said cooking oven according to the preamble of claim 1.

[0002] During operation of the cooking oven, in particular during a pyrolytic cleaning operation of the oven cavity, the outer panel or outer glass panel of the oven door is heated up. There are regulations limiting the temperature of the outer glass panel in the area of the door handle. Moreover, it is reasonable in view of the user's safety and health that the temperature of the outer glass panel in the environment of the door handle is limited.

[0003] Usually, the limitation of the temperature at the outer glass panel is achieved by venting the oven door. For example, air is sucked through the door and a lower cooling channel by a radial fan and is blown out through an upper cooling channel. The upper cooling channel and the lower cooling channel are arranged one upon the other. However, such a cooling system requires a large height, while the oven cavities of modern cooking ovens have often large volumes.

[0004] EP 0 964 208 A1 discloses a cooking oven with a cooling system for the oven door. A suction channel, an exhaust channel and a tangential fan are arranged above a top wall of the oven cavity. The inlet of the suction channel and the outlet of the exhaust channel are arranged side by side at the same level in the front frame of the oven cavity. In the closed state of the oven door a cooling air stream is sucked directly via the suction channel and due to a Venturi effect by the exhaust channel.

[0005] US 2011/0214661 A1 discloses a cooking oven with a cooling system for the oven door. Two suction tubes, an exhaust channel and a radial fan are arranged above a top wall of the oven cavity. The long and thin suction tubes include a bend of 90 degrees in each case. Additionally, the sucked air has to pass a winding route within the oven door.

[0006] EP 2 333 424 A1 discloses a vented oven door for a cooking oven. The over door includes two door channels. The one door channel is connected to a suction channel. The other door channel is connected to the ambient and an exhaust channel, so that air from said other door channel is entrained by the air from the exhaust channel.

[0007] GB 2 401 932 A discloses a cooking oven with two oven cavities on top of each other. Two cooling systems are provided for the oven doors. The lower oven door is cooled down by a suction channel and a tangential fan. The upper oven door is cooled down by an exhaust channel and a further tangential fan due to the Venturi effect by said exhaust channel.

[0008] It is an object of the present invention to provide a cooking oven with a cooling system for an oven door of said cooking oven, which cooling system has a compact structure and allows a high efficiency.

[0009] The object is achieved by the cooking oven with the oven door and the cooling system for the oven door of the cooking oven according to claim 1.

[0010] According to the present invention at least one inlet of the cooling fan is arranged axially to an impeller of said cooling fan, while the outlet of the cooling fan is arranged radially to the impeller of said cooling fan, wherein the cooling fan is a centrifugal fan.

[0011] One idea of the present invention relates to the different kinds of cooling air streams generated in the oven door by the cooling system. The suction channel and the suction hole provide a main cooling air stream, while the exhaust channel and the Venturi opening generate an assisting cooling air stream.

[0012] Since at least one inlet of the cooling fan is arranged axially to an impeller of said cooling fan, while the outlet of the cooling fan is arranged radially to the impeller, wherein the cooling fan is a centrifugal fan, the centrifugal fan is more effective than other fan types, since it generates higher pressures and therefore pushes air through the narrow cooling channel.

[0013] In particular, the at least one suction channel, the at least one exhaust channel and the at least one cooling fan are arranged above a top wall of an oven cavity of the cooking oven.

[0014] In this case, the cooling fan includes a lower inlet connected to at least one suction channel.

[0015] Moreover, the cooling fan includes an upper inlet for sucking air from a space above the top wall of the oven cavity in order to cool down components of the cooking oven inside said space.

[0016] Further, the inlet of the suction channel and the outlet of the exhaust channel may be arranged at the same level. Preferably, the inlet of the at least one suction channel and the outlet of the at least one exhaust channel are arranged along one line. For example, the inlet of the at least one suction channel and the outlet of the at least one exhaust channel are arranged side by side. The one-line arrangement of the inlet and outlet in the front frame combined with the Venturi-assisted door ventilation is space-saving. These constellations allow a compact structure of the cooling system.

[0017] Moreover, the outlet of the suction channel and the inlet of the exhaust channel may be arranged at different levels.

[0018] Substantially, the at least one suction channel and/or the at least one exhaust channel extend horizontally. This contributes to the compact structure of the cooling system.

[0019] In particular, the cooling system comprises the oven door including at least one suction hole and at least one Venturi opening.

[0020] Moreover, the suction hole and the Venturi opening may be arranged in an upper portion of the oven door.

[0021] According to a preferred embodiment of the present invention, the cooling system includes a central exhaust channel and two lateral suction channels, wherein the oven door includes a central Venturi opening and two lateral suction holes.

[0022] In this case, the outlet of the central exhaust channel may be connected to or correspond with the central Venturi opening of the oven door, while the inlets of the lateral suction channels may be connected to or correspond with the lateral suction holes. The cooling air stream through the central portion of the oven door is the assisting cooling air stream, i.e. generated by the Venturi effect, while the cooling air stream through the lateral portions of the oven door is the main cooling air stream, i.e. generated by the cooling fan.

[0023] According to an alternative embodiment of the present invention, the cooling system includes a central suction channel and two lateral exhaust channels, wherein the oven door includes a central suction hole and two lateral Venturi openings.

[0024] In the latter case, the inlet of the central suction channel may be connected to or correspond with the central suction hole of the oven door, while the outlets of the lateral exhaust channels may be connected to or correspond with the lateral Venturi openings. The cooling air stream through the central portion of the oven door is the main cooling air stream, while the cooling air stream through the lateral portions of the oven door is the assisting cooling air stream.

[0025] At last, the present invention relates to a cooking oven with at least on oven door, wherein said cooking oven comprises the cooling system mentioned above.

[0026] Novel and inventive features of the present invention are set forth in the appended claims.

[0027] The present invention will be described in further detail with reference to the drawings, in which

FIG 1 illustrates a schematic perspective view of a cooking oven with a cooling system according to a first embodiment of the present invention,

FIG 2 illustrates a schematic front view of the cooking oven with the cooling system according to the first embodiment of the present invention,

FIG 3 illustrates a schematic top view of the cooking oven with the cooling system according to the first embodiment of the present invention,

FIG 4 illustrates a schematic perspective view of an oven door of the cooking oven with the cooling system according to the first embodiment of the present invention,

FIG 5 illustrates a schematic perspective view of the cooking oven with the cooling system according to a second embodiment of the present invention,

FIG 6 illustrates a schematic perspective view of the oven door of the cooking oven with the cooling system according to the second embodiment of the present invention,

FIG 7 illustrates a schematic sectional side view through a central portion of the cooking oven with the cooling system according to the first embodiment of the present invention, and

FIG 8 illustrates a schematic sectional side view through a lateral portion of the cooking oven with the cooling system according to the first embodiment of the present invention.

[0028] FIG 1 illustrates a schematic perspective view of a cooking oven 10 with a cooling system according to a first embodiment of the present invention.

[0029] The cooking oven 10 comprises an oven cavity 12 enclosed by a top wall, a bottom wall, a rear wall and two side walls. The open front side of the oven cavity 12 is closed or closable by an oven door 14. The cooling system is arranged above the top wall of the cooking oven 10.

[0030] In this embodiment, the cooling system includes two suction channels 16, an exhaust channel 18, a cooling fan 20 and a fan motor 22. In this example, the cooling fan 20 is arranged upon the centre of the top wall of the cooking oven 10. Alternatively, the cooling fan 20 may be arranged on the left hand side or right hand side and/or on the front portion or rear portion upon the top wall of the cooking oven 10. It is not necessary that the cooling fan 20 is arranged upon the centre of the top wall of the cooking oven 10. The exhaust channel 18 extends from the cooling fan 20 to an upper central portion of the oven door 14, when said oven door 14 is in a closed state. The suction channels 16 extend from upper lateral portions of the oven door 14 to the cooling fan 20, when said oven door 14 is in the closed state. The cooling fan 20 is driven by the fan motor 22 arranged above said cooling fan 20.

[0031] The inlets of the suction channels 16 and the outlet of the exhaust channel 18 are arranged at the same level. Fresh air is sucked into the oven door 14, wherein said fresh air enters the bottom side of the closed oven door 14. Inside the oven door 14 a cooling air stream flows vertically upwards. In the lateral portions of the oven door 14 the vertical cooling air stream is sucked by the cooling fan 20 via the suction channels 16. In the central portion of the oven door 14 the vertical cooling air stream is sucked due to the Venturi effect generated by the air stream from the exhaust channel 18 above the Venturi openings.

[0032] The cooling fan 20 is a centrifugal fan, wherein the axis of the fan impeller is vertical. The outlets of the suction channels 16 are connected to a bottom side of the cooling fan 20. The cooling air stream from the suction channels 16 enters the cooling fan 20 axially to the fan impeller, leaves said cooling fan 20 radially to the fan impeller and enters the exhaust channel 18. In this example, the cooling fan 20 includes an upper inlet and a lower inlet arranged axially to the fan impeller. The lower inlet of the cooling fan 20 is connected to the suction channels 16. The upper inlet of the cooling fan 20 sucks

air from a space above the top wall of the oven cavity 12, so that components, in particular electric and/or electronic components, inside said space are cooled down. The inlet of the exhaust channel 18 is connected to the circumferential side of the cooling fan 20.

[0033] FIG 2 illustrates a schematic front view of the cooking oven 10 with the cooling system according to the first embodiment of the present invention.

[0034] The cooling system is arranged above the top wall of the cooking oven 10. The cooling fan 20 is driven by the fan motor 22 arranged above said cooling fan 20. The inlets of the suction channels 16 and the outlet of the exhaust channel 18 are arranged at the same level. In this example, the inlets of the suction channels 16 and the outlet of the exhaust channel 18 are formed a horizontal slots.

[0035] Additionally, FIG 2 shows two sectional side views A-A and B-B of an upper portion of the oven door 14. The oven door 14 includes an outer glass panel 24 and an inner glass panel 26. In this example, the oven door 14 includes further two intermediate glass panels 28. The sectional side view A-A relates to those parts of the oven door 14 arranged in front of the inlets of the suction channels 16, while the sectional side view B-B relates to that part of the oven door 14 arranged in front of the outlet of the exhaust channel 18.

[0036] The oven door 14 includes two suction holes 30 arranged in front of the corresponding inlets of the suction channels 16 in the closed state of the oven door 14. The suction holes 30 are arranged at the upper portion of the inner side of the oven door 14. The cooling air stream flows upwards through the oven door 14 and enters the suction channels 16 via the suction holes 30, wherein said cooling air stream is directly driven by the cooling fan 20.

[0037] Further, the oven door 14 includes a Venturi opening 32 arranged in front of the corresponding outlet of the exhaust channel 18 in the closed state of the oven door 14. The Venturi opening 32 is arranged at the top side of the oven door 14. The cooling air stream flows upwards through the oven door 14 and enters the ambient via the Venturi opening 32, wherein said cooling air stream is driven by the Venturi effect generated by the air cooling air stream leaving the exhaust channel 18.

[0038] The cooling air stream through the oven door 14 is composed by two lateral cooling air streams directly sucked by the cooling fan 20 via the suction channels 16 on the one hand and by one central cooling air stream driven by the Venturi effect generated by cooling air stream from the exhaust channel 18 on the other hand.

[0039] FIG 3 illustrates a schematic top view of the cooking oven 10 with the cooling system according to the first embodiment of the present invention.

[0040] The inlets of the suction channels 16 and the outlet of the exhaust channel 18 are arranged behind the oven door 14 at the same level. However, the outlets of the suction channels 16 are arranged at a lower level than the inlet of the exhaust channel 18. The outlets of the suction channels 16 are connected to the bottom side of the cooling fan 20, so that the cooling air stream from the suction channels 16 enters the cooling fan 20 axially to the fan impeller. The inlet of the exhaust channel 18 is connected to the circumferential side of the cooling fan 20, so that the cooling air stream leaves said cooling fan 20 radially to the fan impeller and enters the exhaust channel 18.

[0041] FIG 4 illustrates a schematic perspective view of an oven door 14 of the cooking oven 10 with the cooling system according to the first embodiment of the present invention.

[0042] The oven door 14 includes the suction holes 30 and the Venturi opening 32. In the closed state of the oven door 14, the suction holes 30 are connected to the inlets of the suction channels 16, while the Venturi opening 32 is connected to the outlet of the exhausts channel 18. The cooling air stream through the suction holes 30 is directly sucked by the cooling fan 20 via the suction channels 16. The cooling air stream through the Venturi opening 32 is driven by the Venturi effect generated by the cooling air stream from the exhaust channel 18.

[0043] FIG 5 illustrates a schematic perspective view of the cooking oven 10 with the cooling system according to a second embodiment of the present invention.

[0044] The cooking oven 10 comprises the oven cavity 12 enclosed by the top wall, the bottom wall, the rear wall and the two side walls.

[0045] The open front side of the oven cavity 12 is closed or closable by an oven door 14. The cooling system is arranged above the top wall of the cooking oven 10.

[0046] In this embodiment, the cooling system includes one suction channel 16, two exhaust channels 18, the cooling fan 20 and the fan motor 22. The suction channel 16 extends from the upper central portion of the oven door 14 to the cooling channel 20, when said oven door 14 is in the closed state. The cooling fan 20 is arranged on the left side of the top wall of the cooking oven 10. The exhaust channels 18 extend from the cooling fan 20 to the upper lateral portion of the oven door 14, when said oven door 14 is in the closed state. The cooling fan 20 is driven by the fan motor 22 arranged above said cooling fan 20.

[0047] The inlet of the suction channels 16 and the outlets of the exhaust channel 18 are arranged at the same level. Fresh air is sucked through the oven door 14, wherein said fresh air enters the bottom side of the closed oven door 14. Inside the oven door 14 the cooling air stream flows vertically upwards. In the central portion of the oven door 14 the vertical cooling air stream is sucked by the cooling fan 20 via the suction channels 16. In the lateral portions of the oven door 14 the vertical cooling air stream is sucked by the Venturi effect generated by the air stream from the exhaust channels 18.

[0048] The cooling fan 20 is a centrifugal fan, wherein the axis of the fan impeller is arranged vertically. The outlet of the suction channel 16 is connected to the bottom side of the cooling fan 20. The cooling air stream

from the suction channel 16 enters the cooling fan 20 axially to the fan impeller, leaves said cooling fan 20 radially to the fan impeller and enters the both exhaust channels 18. The inlets of the exhaust channels 18 are connected to the circumferential side of the cooling fan 20.

[0049] FIG 6 illustrates a schematic perspective view of the oven door 14 of the cooking oven 10 with the cooling system according to the second embodiment of the present invention.

[0050] The oven door 14 includes one suction hole 30 and two Venturi openings 32. In the closed state of the oven door 14, the suction hole 30 is connected to the inlet of the suction channel 16, while the Venturi openings 32 are connected to the outlets of the exhausts channels 18. The cooling air stream through the suction hole 30 is directly sucked by the cooling fan 20 via the suction channel 16. The cooling air stream through the Venturi openings 32 is driven by the Venturi effect generated by the cooling air stream from the exhaust channels 18.

[0051] The cooling system according to the second embodiment comprises one suction channel 16 and two exhaust channels 18, while the cooling system according to the first embodiment comprises two suction channels 16 and one exhaust channel 18.

[0052] FIG 7 illustrates a schematic sectional side view through a central portion of the cooking oven 10 with the cooling system according to the first embodiment of the present invention.

[0053] The sectional side view relates to the central portion of the cooking oven 10, in which the outlet of the exhaust channel 18 is aligned with the Venturi opening 32 of the oven door 14. The Venturi opening 32 is arranged in the top side of the oven door 14. The cooling air stream flows upwards through the oven door 14 and enters the ambient via the Venturi opening 32, wherein said cooling air stream is driven by the Venturi effect generated by the air cooling air stream leaving the exhaust channel 18.

[0054] FIG 8 illustrates a schematic sectional side view through a lateral portion of the cooking oven 10 with the cooling system according to the first embodiment of the present invention.

[0055] The sectional side view relates to the lateral portion of the cooking oven 10, in which the inlets of the suction channels 16 are aligned with the suction holes 30 of the oven door 14. The suction holes 30 are arranged in the upper portion of the inner side of the oven door 14. The cooling air stream flows upwards through the oven door 14 and enters the suction channels 16 via the suction holes 30, wherein said cooling air stream is directly driven by the cooling fan 20.

[0056] The cooling air stream through the oven door 14 is composed by one central cooling air stream driven by the Venturi effect generated by cooling air stream from the exhaust channel 18 as shown in FIG 7 and two lateral cooling air streams directly sucked by the cooling fan 20 via the suction channels 16 as shown in FIG 8.

List of reference numerals

[0057]

10	cooking oven
12	oven cavity
14	oven door
16	suction channel
18	exhaust channel
20	cooling fan
22	fan motor
24	outer glass panel
26	inner glass panel
28	intermediate glass panel
30	suction hole
32	Venturi opening

Claims

1. A cooking oven (10) with an oven door (14) and a cooling system for the oven door (14) of said cooking oven (10), wherein:

- the cooling system includes at least one cooling fan (20),
- the cooling system includes at least one suction channel (16),
- an outlet of the suction channel (16) is connected to an inlet of the cooling fan (20),
- an inlet of the suction channel (16) is arranged behind a suction hole (30) of the oven door (14) in a closed state of said oven door (14),
- the cooling system includes at least one exhaust channel (18),
- an inlet of the exhaust channel (18) is connected to an outlet of the cooling fan (20), and
- an outlet of the exhaust channel (18) is arranged behind a Venturi opening (32) of the oven door (14) in the closed state of said oven door (14), **characterised in that**

the cooling fan (20) is a centrifugal fan (20), wherein the outlet of the cooling fan (20) is arranged radially to the impeller of said cooling fan (20), and the cooling fan (20) includes a lower inlet and an upper inlet arranged axially to the impeller of said cooling fan (20), wherein the lower inlet is connected to the at least one suction channel (16) and the upper inlet is arranged for sucking air from a space above a top wall of a oven cavity (12) in order to cool down components of the cooking oven (10) inside said space.

2. The cooking oven according to claim 1, **characterised in that** the at least one suction channel (16), the at least one exhaust channel (18) and the at least one cooling fan (20) are arranged above the top wall of the oven

cavity (12) of the cooking oven (14).

3. The cooking oven according to any one of the preceding claims,
characterised in that
the inlet of the suction channel (16) and the outlet of the exhaust channel (18) are arranged at the same level, wherein preferably the inlet of the suction channel and the outlet of the exhaust channel are arranged along one line.

4. The cooking oven according to any one of the preceding claims,
characterised in that
the outlet of the suction channel (16) and the inlet of the exhaust channel (18) are arranged at different levels.

5. The cooking oven according to any one of the preceding claims,
characterised in that
the at least one suction channel (16) and/or the at least one exhaust channel (18) extend horizontally.

6. The cooking oven according to any one of the preceding claims,
characterised in that
the suction hole (30) and the Venturi opening (32) are arranged in an upper portion of the oven door (14).

7. The cooking oven according to any one of the preceding claims,
characterised in that
the cooling system includes a central exhaust channel (18) and two lateral suction channels (16), wherein the oven door (14) includes a central Venturi opening (32) and two lateral suction holes (30).

8. The cooking oven according to claim 7,
characterised in that
the outlet of the central exhaust channel (18) is connected to or corresponds with the central Venturi opening (32) of the oven door (14), while the inlets of the lateral suction channels (16) are connected to or corresponds with the lateral suction holes (30).

9. The cooking oven according to any one of the claims 1 to 6,
characterised in that
the cooling system includes a central suction channel (16) and two lateral exhaust channels (18), wherein the oven door (14) includes a central suction hole (30) and two lateral Venturi openings (32).

10. The cooking oven according to claim 7,
characterised in that
the inlet of the central suction channel (16) is connected to or corresponds with the central suction hole (30) of the oven door (14), while the outlets of the lateral exhaust channels (18) are connected to or corresponds with the lateral Venturi openings (32).

Patentansprüche

1. Backofen (10) mit einer Ofentür (14) und einem Kühlsystem für die Ofentür (14) des Backofens (10), wobei:

- das Kühlsystem mindestens ein Kühlgebläse (20) beinhaltet,
- das Kühlsystem mindestens einen Ansaugkanal (16) beinhaltet,
- ein Auslass des Ansaugkanals (16) mit einem Einlass des Kühlgebläses (20) verbunden ist,
- ein Einlass des Ansaugkanals (16) hinter einem Ansaugloch (30) der Ofentür (14) in einem geschlossenen Zustand der Ofentür (14) angeordnet ist,
- das Kühlsystem mindestens einen Abluftkanal (18) beinhaltet,
- ein Einlass des Abluftkanals (18) mit einem Auslass des Kühlgebläses (20) verbunden ist, und
- ein Auslass des Abluftkanals (18) hinter einer Venturi-Öffnung (32) der Ofentür (14) im geschlossenen Zustand der Ofentür (14) angeordnet ist,

dadurch gekennzeichnet, dass
das Kühlgebläse (20) ein Zentrifugalgebläse (20) ist, wobei der Auslass des Kühlgebläses (20) radial zum Laufrad des Kühlgebläses (20) angeordnet ist, und das Kühlgebläse (20) einen unteren Einlass und einen oberen Einlass beinhaltet, die axial zum Laufrad des Kühlgebläses (20) angeordnet sind, wobei der untere Einlass mit dem mindestens einen Ansaugkanal (16) verbunden ist und der obere Einlass dazu angeordnet ist, Luft aus einem Raum oberhalb einer oberen Wand eines Ofeninnenraums (12) zu dem Zweck anzusaugen, Komponenten des Backofens (10) innerhalb des Raums abzukühlen.

2. Backofen nach Anspruch 1,
dadurch gekennzeichnet, dass
der mindestens eine Ansaugkanal (16), der mindestens eine Abluftkanal (18) und das mindestens eine Kühlgebläse (20) oberhalb der oberen Wand des Ofeninnenraums (12) des Backofens (14) angeordnet sind.

3. Backofen nach einem der vorhergehenden Ansprüche,
dadurch gekennzeichnet, dass
der Einlass des Ansaugkanals (16) und der Auslass

des Abluftkanals (18) auf demselben Niveau angeordnet sind, wobei vorzugsweise der Einlass des Ansaugkanals und der Auslass des Abluftkanals entlang einer Linie angeordnet sind.

4. Backofen nach einem der vorhergehenden Ansprüche,
dadurch gekennzeichnet, dass
der Auslass des Ansaugkanals (16) und der Einlass des Abluftkanals (18) auf verschiedenen Niveaus angeordnet sind.

5. Backofen nach einem der vorhergehenden Ansprüche,
dadurch gekennzeichnet, dass
der mindestens eine Ansaugkanal (16) und/oder der mindestens eine Abluftkanal (18) sich horizontal erstrecken.

6. Backofen nach einem der vorhergehenden Ansprüche,
dadurch gekennzeichnet, dass
das Ansaugloch (30) und die Venturi-Öffnung (32) in einem oberen Abschnitt der Ofentür (14) angeordnet sind.

7. Backofen nach einem der vorhergehenden Ansprüche,
dadurch gekennzeichnet, dass
das Kühlsystem einen mittleren Abluftkanal (18) und zwei seitliche Ansaugkanäle (16) beinhaltet, wobei die Ofentür (14) eine mittlere Venturi-Öffnung (32) und zwei seitliche Ansauglöcher (30) beinhaltet.

8. Backofen nach Anspruch 7,
dadurch gekennzeichnet, dass
der Auslass des mittleren Abluftkanals (18) mit der mittleren Venturi-Öffnung (32) der Ofentür (14) verbunden ist oder dieser entspricht, während die Einlässe der seitlichen Ansaugkanäle (16) mit den seitlichen Ansauglöchern (30) verbunden sind oder diesen entsprechen.

9. Backofen nach einem der Ansprüche 1 bis 6,
dadurch gekennzeichnet, dass
das Kühlsystem einen mittleren Ansaugkanal (16) und zwei seitliche Abluftkanäle (18) beinhaltet, wobei die Ofentür (14) ein mittleres Ansaugloch (30) und zwei seitliche Venturi-Öffnungen (32) beinhaltet.

10. Backofen nach Anspruch 7,
dadurch gekennzeichnet, dass
der Einlass des mittleren Ansaugkanals (16) mit dem mittleren Ansaugloch (30) der Ofentür (14) verbunden ist oder diesem entspricht, während die Auslässe der seitlichen Abluftkanäle (18) mit den seitlichen Venturi-Öffnungen (32) verbunden sind oder diesen entsprechen.

Revendications

1. Four de cuisson (10) muni d'une porte (14) de four et d'un système de refroidissement pour la porte (14) de four dudit four de cuisson (10),

- le système de refroidissement comportant au moins un ventilateur de refroidissement (20),
- le système de refroidissement comportant au moins un canal d'aspiration (16),
- une sortie du canal d'aspiration (16) étant reliée à une entrée du ventilateur de refroidissement (20),
- une entrée du canal d'aspiration (16) étant agencée derrière un trou d'aspiration (30) de la porte (14) de four dans un état fermé de ladite porte (14) de four,
- le système de refroidissement comportant au moins un canal d'échappement (18),
- une entrée du canal d'échappement (18) étant reliée à une sortie du ventilateur de refroidissement (20), et
- une sortie du canal d'échappement (18) étant agencée derrière une ouverture à effet Venturi (32) de la porte (14) de four dans l'état fermé de ladite porte (14) de four,

caractérisé en ce que
le ventilateur de refroidissement (20) est un ventilateur centrifuge (20), la sortie du ventilateur de refroidissement (20) étant agencée radialement par rapport à la roue dudit ventilateur de refroidissement (20), et
le ventilateur de refroidissement (20) comporte une entrée inférieure et une entrée supérieure agencées axialement par rapport à la roue dudit ventilateur de refroidissement (20), l'entrée inférieure étant reliée à l'au moins un canal d'aspiration (16) et l'entrée supérieure étant agencée pour aspirer de l'air depuis un espace situé au-dessus d'une paroi de dessus d'une cavité (12) de four dans le but de refroidir des composants du four de cuisson (10) à l'intérieur dudit espace.

2. Four de cuisson selon la revendication 1,
caractérisé en ce que
l'au moins un canal d'aspiration (16), l'au moins un canal d'échappement (18) et l'au moins un ventilateur de refroidissement (20) sont agencés au-dessus de la paroi de dessus de la cavité (12) de four du four de cuisson (14) .

3. Four de cuisson selon l'une quelconque des revendications précédentes,
caractérisé en ce que
l'entrée du canal d'aspiration (16) et la sortie du canal d'échappement (18) sont agencées au même niveau, de préférence l'entrée du canal d'aspiration et

la sortie du canal d'échappement sont agencées le long d'une ligne.

4. Four de cuisson selon l'une quelconque des revendications précédentes,
caractérisé en ce que
la sortie du canal d'aspiration (16) et l'entrée du canal d'échappement (18) sont agencées à des niveaux différents.

5. Four de cuisson selon l'une quelconque des revendications précédentes,
caractérisé en ce que
l'au moins un canal d'aspiration (16) et/ou l'au moins un canal d'échappement (18) s'étendent horizontalement.

6. Four de cuisson selon l'une quelconque des revendications précédentes,
caractérisé en ce que
le trou d'aspiration (30) et l'ouverture à effet Venturi (32) sont agencés dans une partie supérieure de la porte (14) de four.

7. Four de cuisson selon l'une quelconque des revendications précédentes,
caractérisé en ce que
le système de refroidissement comporte un canal d'échappement central (18) et deux canaux d'aspiration latéraux (16), la porte (14) de four comportant une ouverture à effet Venturi centrale (32) et deux trous d'aspiration latéraux (30).

8. Four de cuisson selon la revendication 7,
caractérisé en ce que
la sortie du canal d'échappement central (18) est reliée, ou correspond, à l'ouverture à effet Venturi centrale (32) de la porte (14) de four, tandis que les entrées des canaux d'aspiration latéraux (16) sont reliées, ou correspondent, aux trous d'aspiration latéraux (30).

9. Four de cuisson selon l'une quelconque des revendications 1 à 6,
caractérisé en ce que
le système de refroidissement comporte un canal d'aspiration central (16) et deux canaux d'échappement latéraux (18), la porte (14) de four comportant un trou d'aspiration central (30) et deux ouvertures à effet Venturi latérales (32).

10. Four de cuisson selon la revendication 7,
caractérisé en ce que
l'entrée du canal d'aspiration central (16) est reliée, ou correspond, au trou d'aspiration central (30) de la porte (14) de four, tandis que les sorties des canaux d'échappement latéraux (18) sont reliées, ou correspondent, aux ouvertures à effet Venturi latérales (32) .

FIG 1

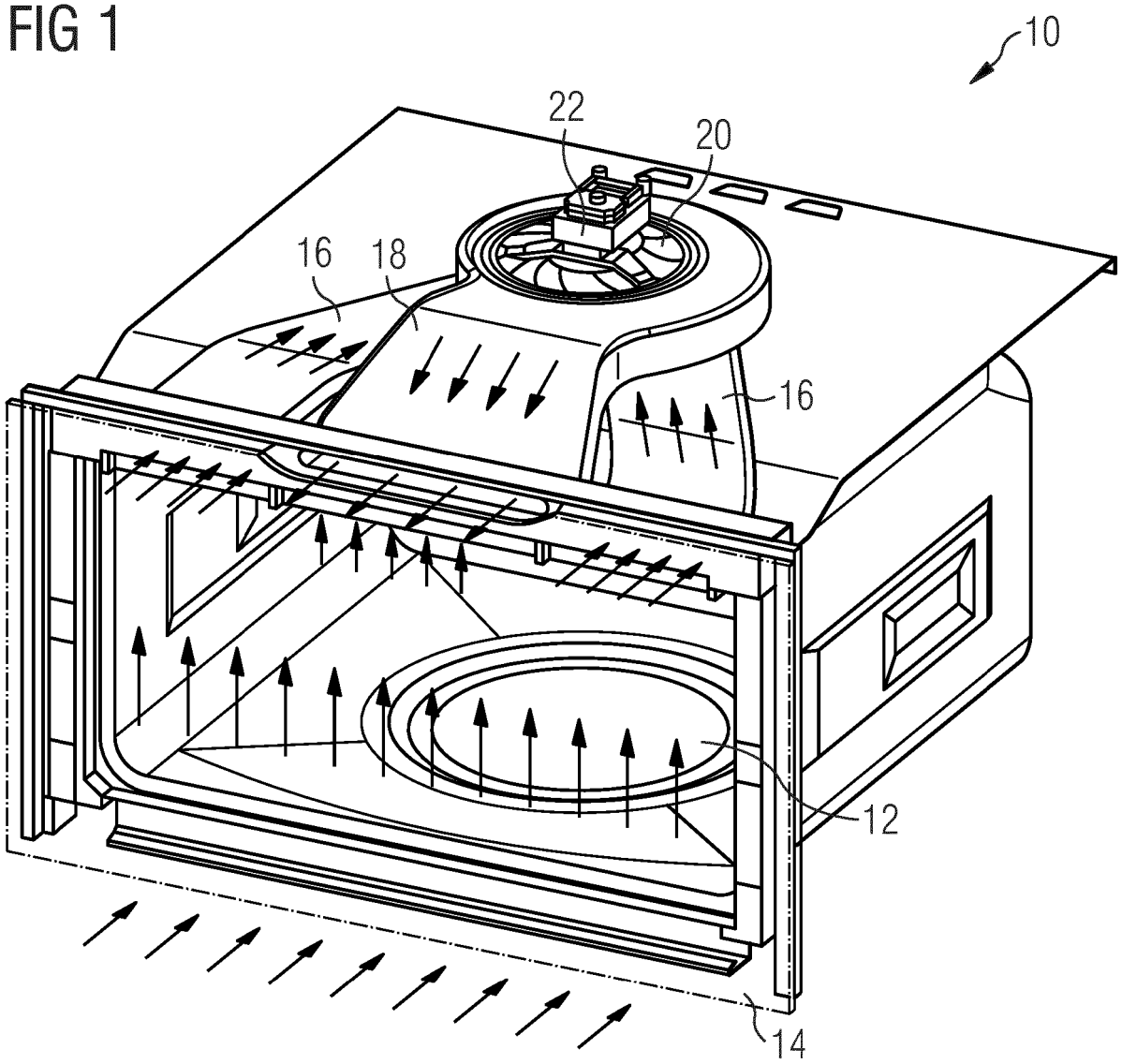
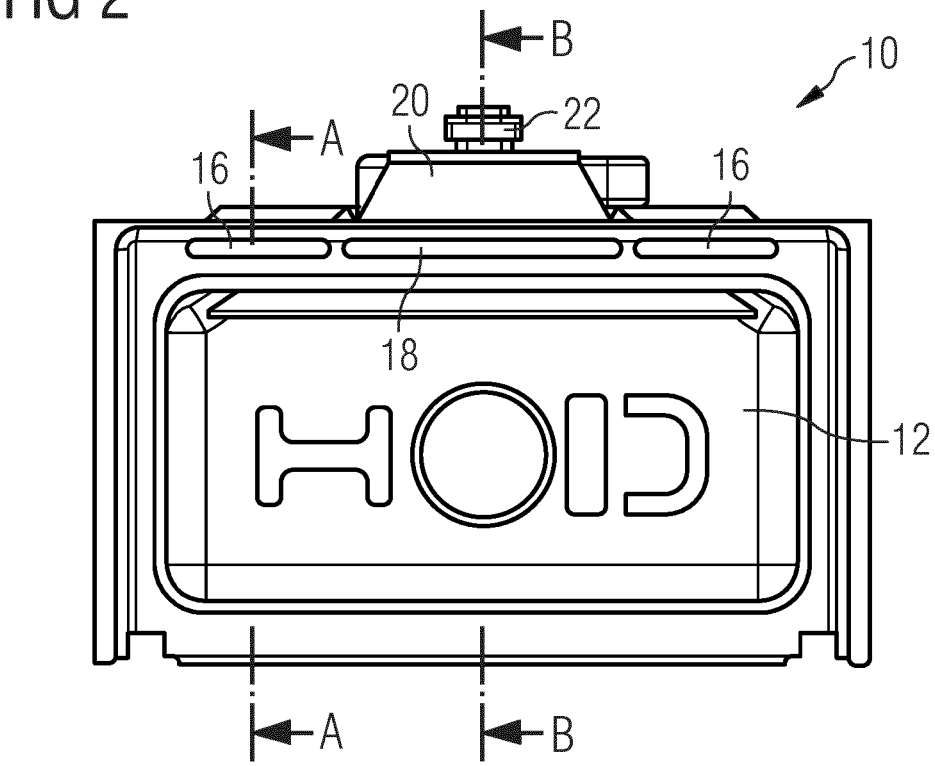
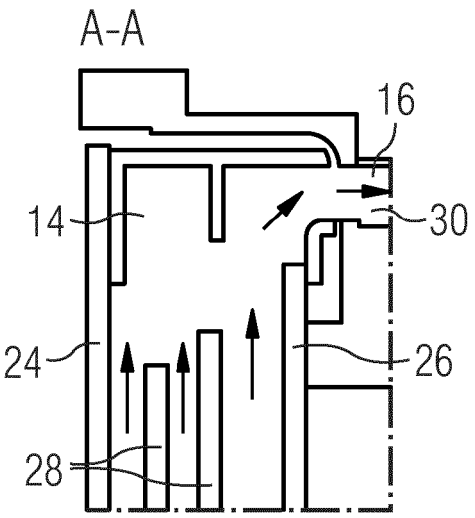


FIG 2





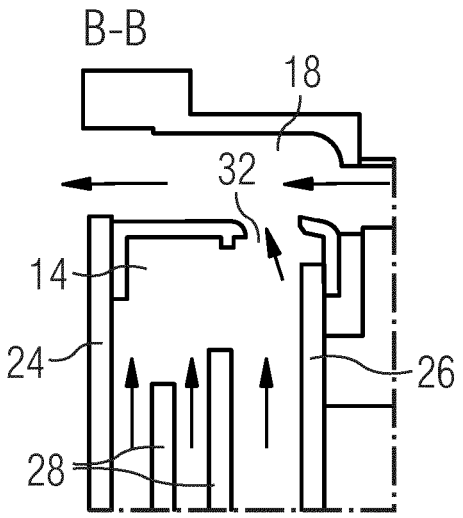


FIG 3

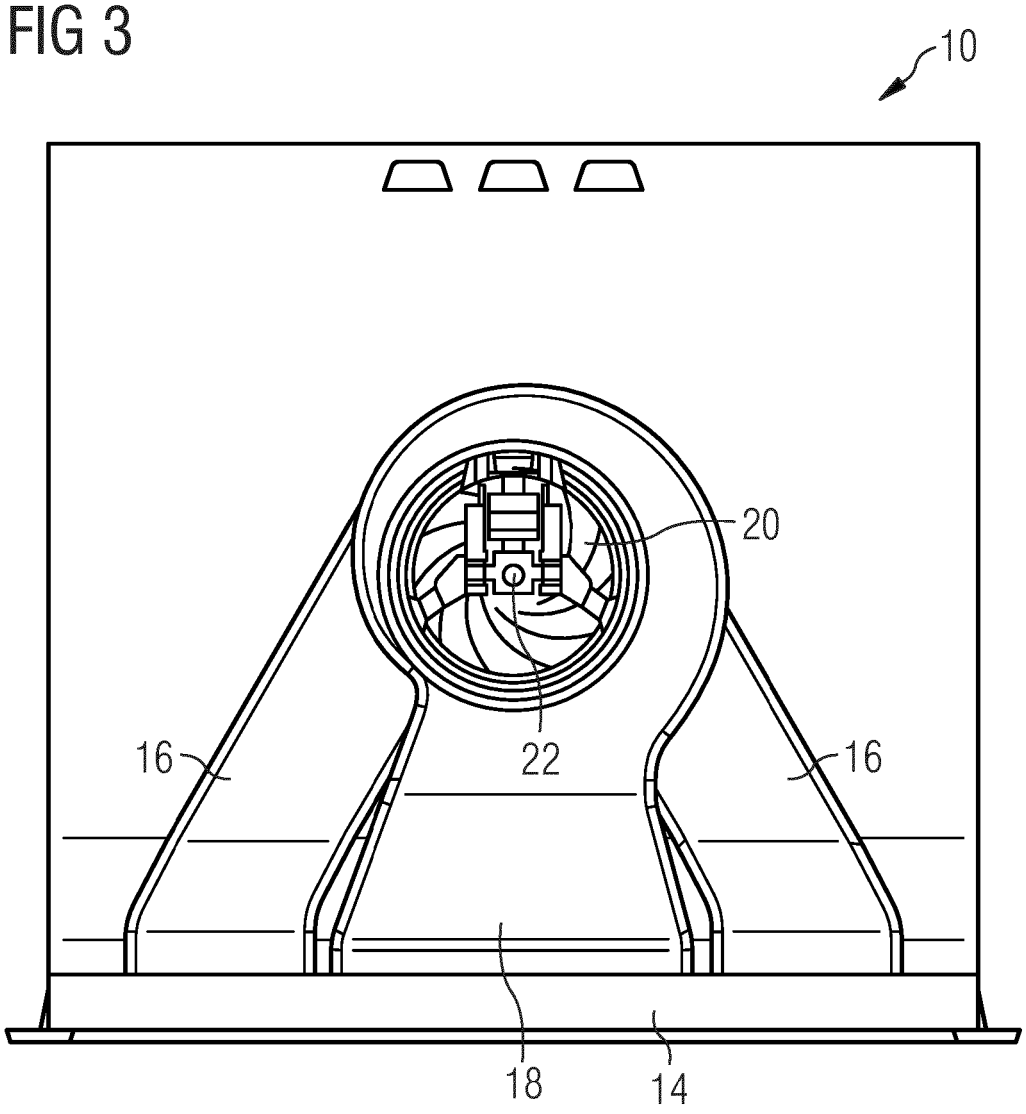


FIG 4

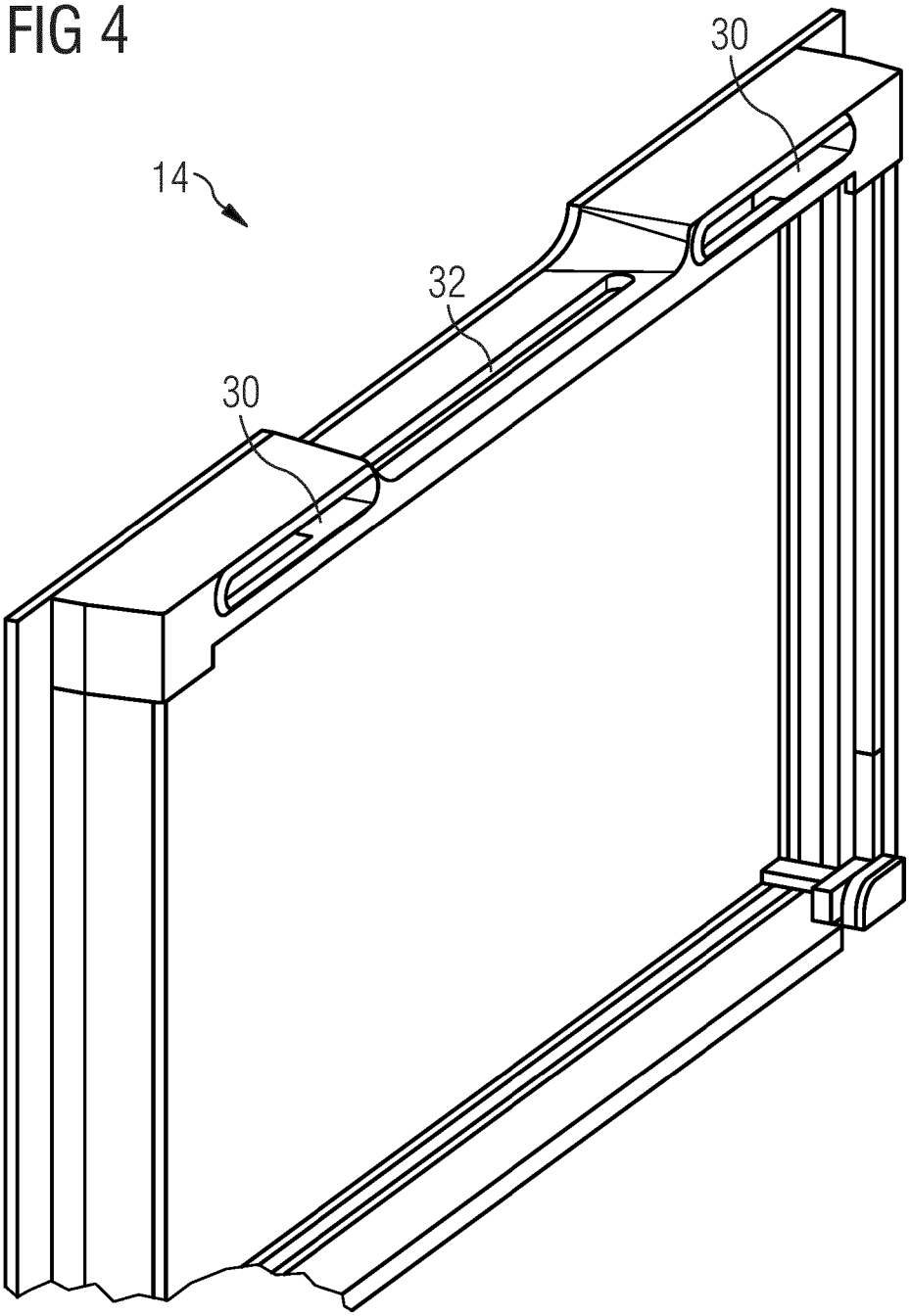


FIG 5

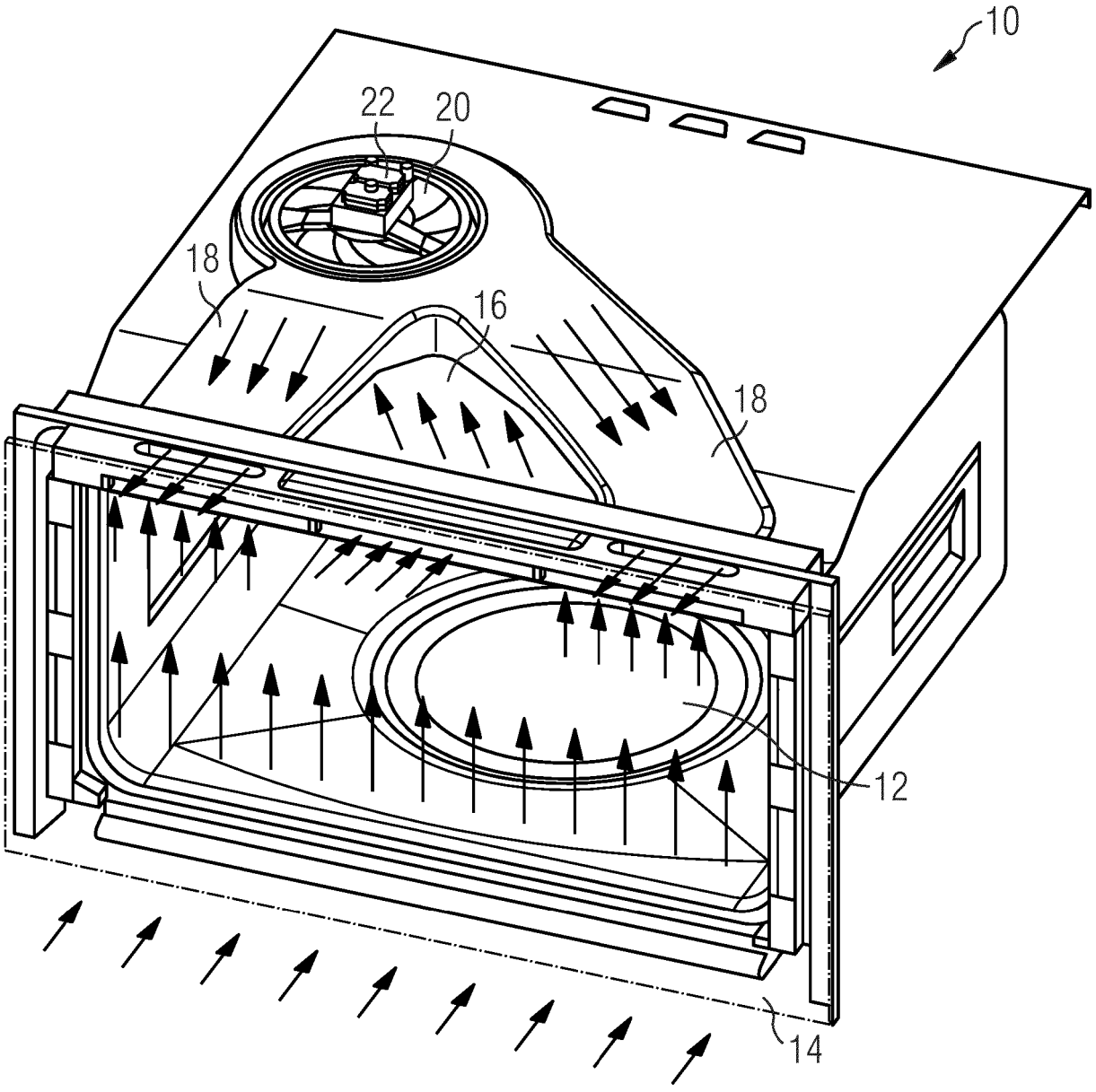


FIG 6

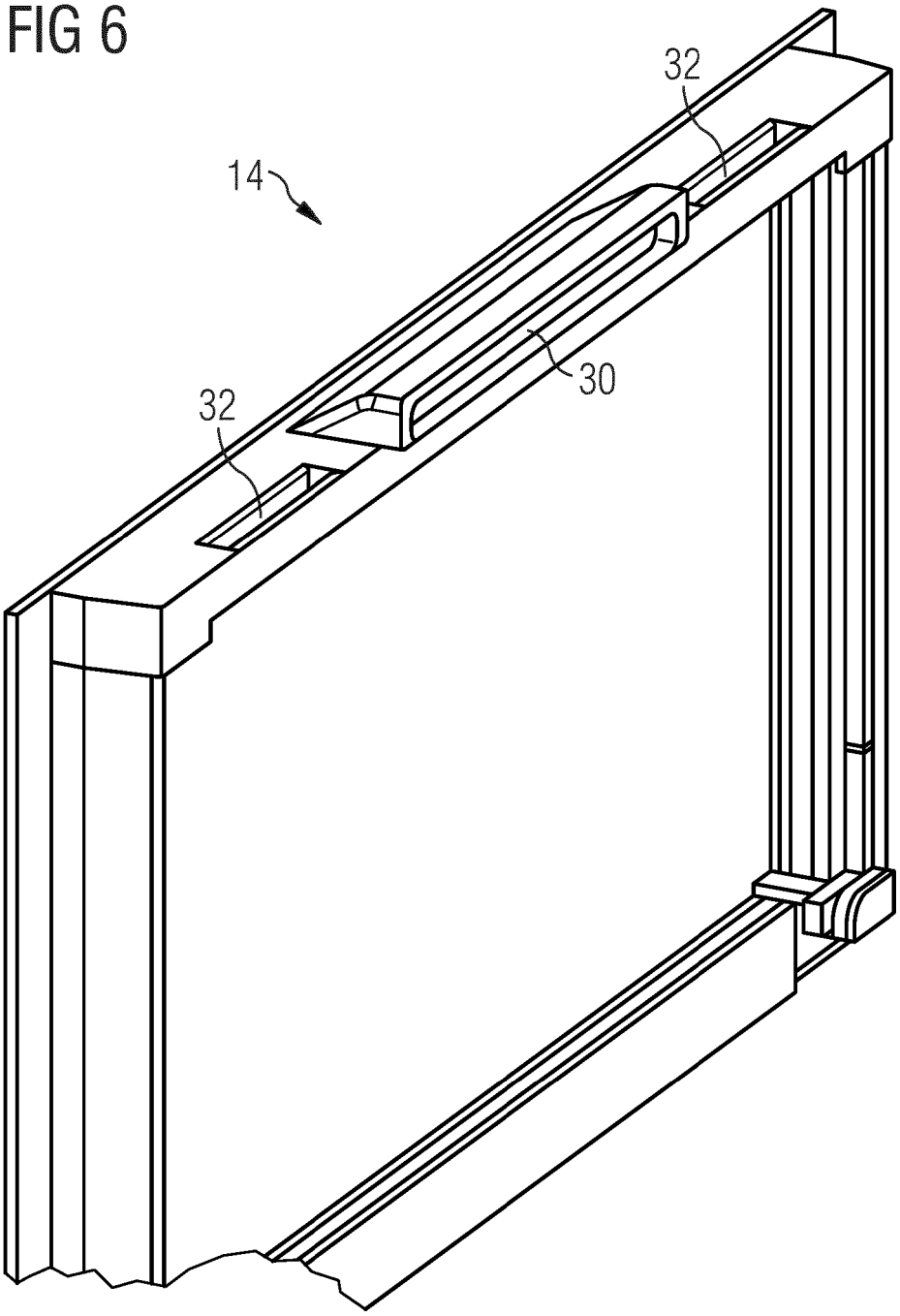


FIG 7

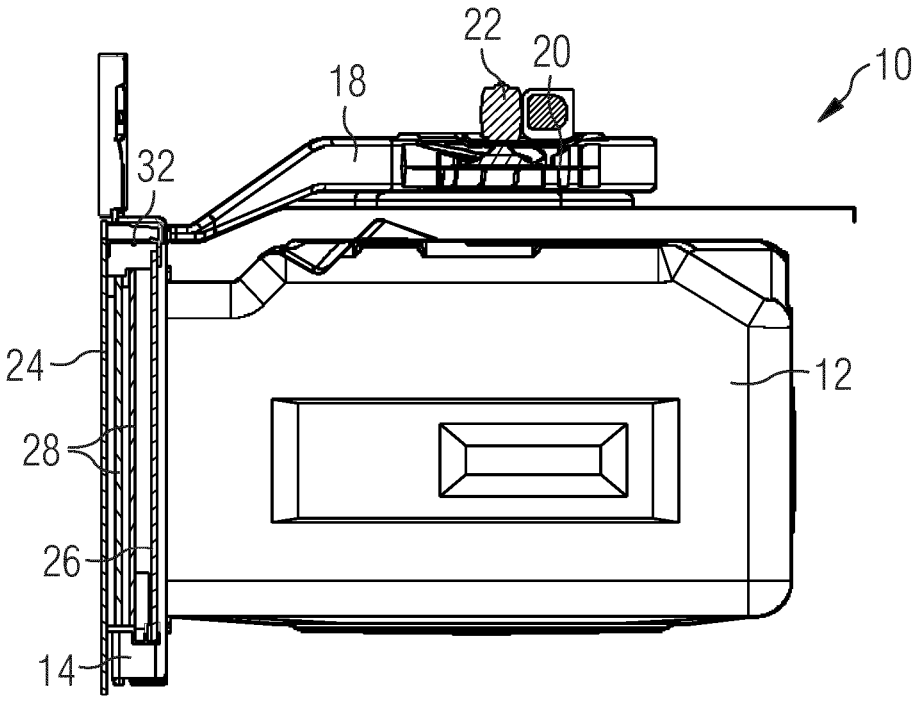
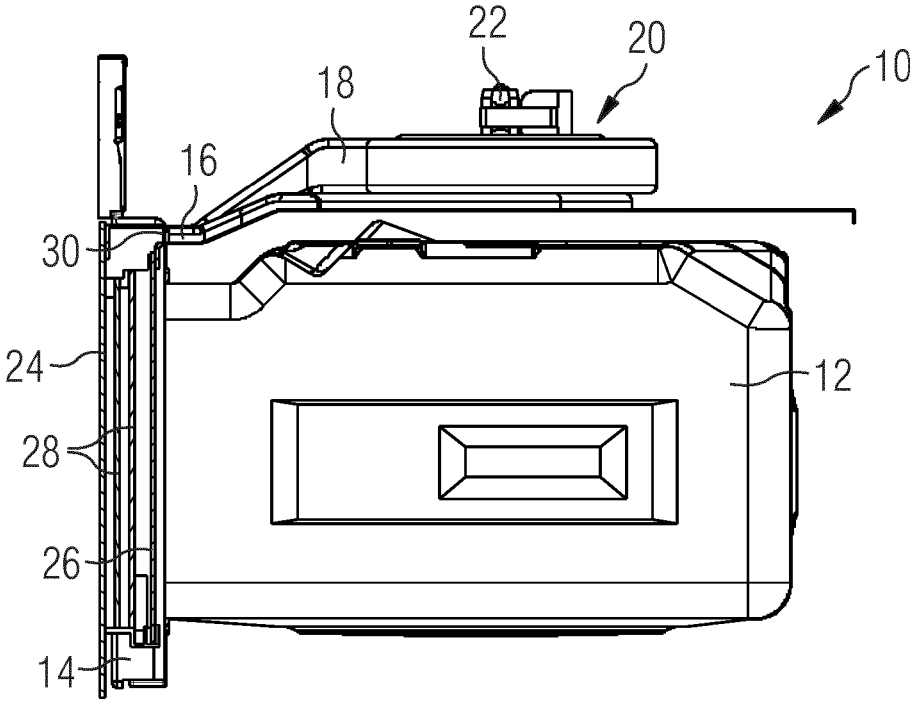


FIG 8



REFERENCES CITED IN THE DESCRIPTION

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