



(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
03.09.2014 Bulletin 2014/36

(51) Int Cl.:
F24C 15/16 ^(2006.01)

(21) Application number: **14155891.6**

(22) Date of filing: **20.02.2014**

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

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(30) Priority: **28.02.2013 IT TO20130167**

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(54) **Method for supporting a container in an oven and oven for its implementation**

(57) The invention relates to a method for supporting a container as a dripping pan or something similar in a muffle oven (1).

For this purpose, it is provided a tray (11) comprising a frame (12) having a shape corresponding to that of the container, provided of edges (17, 18) at a distance from

it such that they can slide along the guides provided along the side walls of the muffle.

In this way it is possible to introduce and to extract the container from the muffle, without tilting it with respect to a horizontal sliding plane of the tray.

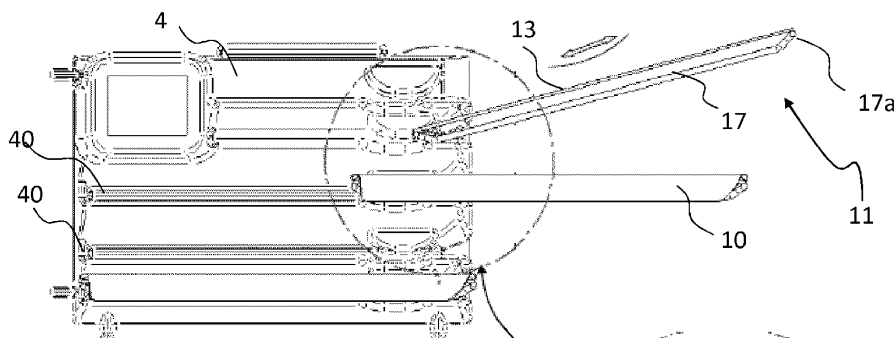


Fig. 5

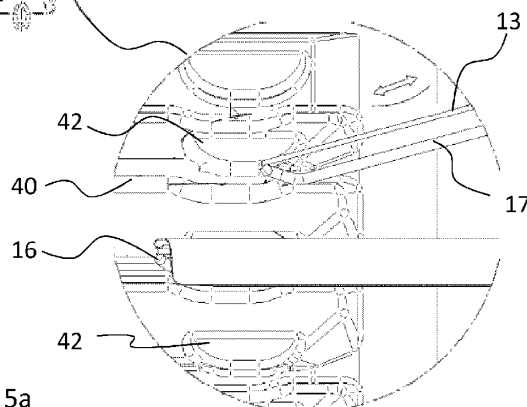


Fig. 5a

Description

[0001] The present invention relates, in general, to a method for supporting in an oven, in particular but not exclusively of domestic type, containers for cooking, as dripping pans, oven pans, and similar.

[0002] The oven can be of any kind, for example a separate appliance that is built in a furniture, or a part of a greater appliance as a kitchen; furthermore, the invention is independent of the type of heating chosen for the oven, whether it be electric or gas or electromagnetic (e.g. microwave) one.

[0003] The invention is related to the muffle ovens, that are those with a body substantially parallelepiped or similar shape, which comprises a cavity or cooking chamber where it is introduced the food to be cooked or heated, frontally closed by a door; inside the cavity of the oven there are usually placed the support grids of the dishes, or, more generally, containers for food to be cooked, among which are known the dripping pans.

[0004] Besides that as a container for food, a dripping pan for the oven can also be used to collect liquid from above in the case of cooking of food on a higher level, for example on a grid or on a roaster arranged in the oven above the dripping pan.

[0005] These are trays, substantially, with a quadrangular shape that are placed on the grids present in the oven, in the case they have dimensions smaller than the dimensions of the muffle, or are directly supported by the side walls of the muffle; and different solutions are known for this purpose, essentially grouped into two categories.

[0006] In the first, the side walls of the muffle of the oven have guides obtained by dimple of the metal sheet of the muffle, along which the edges of the dripping pan can slide; the dripping pan is thus supported directly by the dimples, being able to be extracted or inserted in the oven at different height levels determined by the guides which are formed on the walls of the muffle.

[0007] An example of this type of oven is described in the Italian utility model application MI95U 000399.

[0008] In the other category of known solutions, the guides inside the muffle are obtained by a frame made of metal wires or bars, which in practice have the same function of the dimples of the previous case; also in this solution the dripping pan can be placed in the cooking chamber at various heights depending on the number of guides formed in the frame and then applied to the side walls of the muffle.

[0009] In the known ovens, irrespective of the fact that the guides for the dripping pans are realized by dimples or metal wires, it is expected that when the dripping pan is located at the mouth of the oven, to be extracted or inserted, it is kept in a stable condition projecting in part with respect to the mouth of the muffle, by stopping means: it mainly for purposes of security, in order to avoid that the dripping pan can fall or otherwise be pulled out inadvertently without be supported in flat condition.

[0010] For example, in the ovens in which the guides

of the dripping pan are formed by dimples, the stopping means can be obtained with deviations of the guides themselves with respect to their linear profile: in this way the rear edge of the dripping pan, on which some protuberances are arranged, goes in interference with these deviations so as to stop the sliding of the dripping pan when it is pulled out. For an example of this technical application, please refer to the utility model application mentioned above.

[0011] An equivalent solution is obtained also for metal wire support structures, in which appropriate matching part are arranged; independently of the adopted solution (dimples or metal wires), for the extraction of the dripping pan from the oven and for the release of the dripping pan from the guides disposed on the side walls, it is necessary to make a rotation of the dripping pan with respect to its rear edge so as to tilt it of 10° - 20° with respect to the horizontal plane in which it lies normally.

[0012] It is understandable that such a situation may cause the spill of liquids contained in the dripping pan in the moment in which it is pulled out from the oven, liquids which may have high temperature and which may spill inside the muffle (with consequent generation of fumes) or even on the door and in case on the hands of the person who uses the dripping pan (with consequent possible burn of him).

[0013] Such situation implies evident dangers that would be desirable to avoid and it is therefore an object of the present invention to overcome this drawback of the current technical state of art.

[0014] In other words, the technical problem underlying the present invention is to develop a method for the support of a container, such as a dripping pan or other, in an oven, which allows to handle it grasping during extraction or insertion in the chamber of the oven, without having necessarily to tilt as it happens in most known ovens considered above.

[0015] The idea of a solution to this problem is to arrange a specific element of support which may be associated with the container, being it a dripping pan, a oven pan or other, and that be separated from it at the appropriate time, to handle the container freely without having to perform movements such as rotations, inclinations or otherwise.

[0016] The features of the method of support according to the invention are specifically enunciated in the claims attached here; the invention also comprises an oven for the support of container whose features are also enunciated in the claims which will follow.

[0017] These features, the advantages achieved by them will be more evident from the description which is then made of an embodiment of the invention, shown in the drawings here attached in an indicative and not limitative way, in which:

- Figure 1 shows an isometric view of a muffle of a oven with a supported dripping pan, according to the invention;

- Figure 2 shows an enlarged detail of the previous figure;
- Figure 3 shows a perspective assembled view of the dripping pan associated to a support frame according to the invention;
- Figure 4 shows a support frame for a dripping pan, according to the invention;
- Figures 5 and 5a illustrate some support modes of a dripping pan according to the invention ;
- Figure 6 shows an isometric view of a muffle oven with a dripping pan supported in according to a particular embodiment of the invention;
- Figure 7 shows a support frame of the dripping pan of the previous figure;
- Figure 8 shows some support modes of a dripping pan of Figures 6 and 7.

[0018] With reference to the drawings listed above and in particular considering firstly the figures from 1 to 5, in them with the reference numeral 1 a muffle of an oven according to the invention is generally indicated.

[0019] In the following description there will be only the references to the elements of the muffle necessary to the understanding of the invention, referring, for the other, to the muffles of the known ovens, such as those manufactured by the Applicant nowadays.

[0020] The muffle 1 has a cavity or cooking chamber 2 confined by a series of walls 3-7 made of sheet metal or similar; in particular, the side walls 3,4 have a series of deep-drawn guides 30, 40 for the placement of a dripping pan 10 at different heights with respect to the cavity 2 of the muffle.

[0021] Preferably the guides 30, 40 which are symmetric with respect to a vertical median plane of the muffle, present in the front area close to the mouth 8 of the muffle, a protrusion 32, 42 for stopping a tray 11 for supporting the dripping pan 10.

[0022] Further, in the same area, the guides 30, 40 have a curvature in correspondence of the protrusions 32, 42 downwards relative to their rectilinear profile, on which it will return in more detail below.

[0023] The support tray 11 of the dripping pan 10, shown better in Figure 4, comprises a frame 12 with edges 13, 14, 15, 16 of quadrangular shape corresponding with that of the dripping pan which is supported with its perimeter on the edges 13-16 of the tray 11.

[0024] The latter is made with metal wire shaped and welded, in particular with a metal external wire that forms a closed structure (such as a metal wire folded on itself and then welded for example in correspondence of the rear side 16) on which two further wires are applied through welding to form edges 13, 14.

[0025] In case the dripping pan has a different shape from the quadrangular one, the frame 12 may also have a different shape.

[0026] Independently of that, along the edges of the tray 11 that are located in correspondence of the side walls 3, 4 of the muffle 1, there are edges 16, 17 of the

guide intended to take up the deep-drawn guides 30, 40.

[0027] Advantageously these edges 18, 17 are spaced from the sides 13, 14 of the frame so as to allow the flowing of air in the space between them, when the dripping pan 10 is inserted in the muffle. The transfer of heat by convection between the space underlying and overlying the dripping pan 10 is thus allowed and it is avoided that the dripping pan 10, when in use inside the muffle 1, compromises a sufficiently uniform distribution of heat.

[0028] For this reason, the edges 18, 17 are made by the same metal wire of the frame 12 and, according to the invention, are slightly lowered with respect to the same frame, to which they are joined up by means of the curved ends 17a, 17b and 18a, 18b, folded towards upwards.

[0029] As we can see in Figure 2, the rear ends 17b, 18b of the guide edges 17, 18 of the tray go abut against the stop projection 32 and 42 present on the deep-drawn guides 30, 40, when the tray is in a position advanced towards the mouth 8 of the muffle. When the tray 11 is inserted in the deep-drawn guides 30, 40, the front ends 17a, 18a are located instead between the projection 32, 42 and the mouth of the muffle 8.

[0030] Consequently the tray 11 is free to slide forward and backward along the guides 30, 40 until its rear ends 17b, 18b go abut against the protrusions 32, 42; for the insertion or extraction of the tray 11 it is tilted respect to the horizontal line so that the rear curved ends 17b, 18b can slide along the stop projection 32, 42, as seen in figure 5. The front ends 17a, 18a are used to restore the planarity of the dripping pan 10. In practice, the front ends 17a, 18a and the rear ends 17b, 18b are mutually identical as shape and symmetrical as position, so the user does not have to worry about the insertion side of the tray 11 in the muffle 1.

[0031] According to the invention this operation is carried out advantageously without the dripping pan 10, which can be removed in advance by the tray 11.

[0032] From the above description it can be understood as the way to support the dripping pan 10 allows solving the technical problem at the base of the invention, as said above. In fact, when we have to grab the dripping pan 10 for introducing or extracting it from the oven, it can easily be placed on, or removed from, the support tray 11: this avoids tilting or otherwise releasing from the guides that support it as it is in the technical state of art above considered, eliminating completely the risks associated with these operations.

[0033] Furthermore it should be noted that the dripping pan is kept always in horizontal condition during the movements along the deep-drawn guides 30, 40, so that its movement inside of the cooking chamber 2 of the muffle is completely safe.

[0034] This also applies when the dripping pan 10 protrudes out of the mouth of the muffle 8, because the tray 11 which supports it, remains in horizontal condition when its ends 17b, 18b go abut against the projections 32, 42 of the deep-drawing guides 30, 40.

[0035] As above described, it also applies in the case of embodiments of the invention that differ from the previous one, such as those obtainable in the case where the guides, on the walls of the muffle along which the tray slides, are made with wire instead of being deep-drawing.

[0036] This is the case of the embodiment shown in Figures 6, 7 and 8, in which for convenience have been kept the same reference numbers of the elements structurally or functionally equivalent to those already seen, with the addition of an apex.

[0037] Thus, in this case being the guides 30', 40' realized with metallic wires applied to the walls 3', 4' of the muffle 1', on the sides 17', 18' of the tray 11' the grooves 19', 20' are provided, so that when the tray 11' is in the extracted condition (see fig. 6), they engage the anterior ends 30a', 40a' of the guides 30', 40', constituting the stopping means of the tray 11'.

[0038] The tray remains horizontal as well as the dripping pan 10' placed on it, which can then be easily grasped to remove it from, or put it on, the tray 11': thus no rotation of the dripping pan is needed to grab or move it with respect to the oven.

[0039] In fact, such a movement is only required to release the tray from the guides 30', 40', but this can be easily done without the dripping pan; in this circumstance the folded shape of the rear ends 17b, 18b of the edges 17, 18 of the tray 11', follows its rotation so that it can be extracted or introduced in the muffle oven 1', as shown in Figure 8.

[0040] As easily understandable, also this embodiment allows solving the technical problem underlying the invention.

[0041] In fact, the dripping pan 10' always remains in the horizontal position when it is moved into the cooking chamber 2 of the muffle, being supported by the tray 11' that slides along the guides 30', 40' placed on the walls 3'4'.

[0042] For the extraction from, or the introduction into, the cooking chamber 2' the dripping pan 10' is easily lifted from the tray 11' grabbing it from the edges that stand on the frame 12', without having to perform rotations or other movements that do tilt it.

[0043] Of course on the basis of the teaching from the examples described above, it is possible to obtain further embodiments; it is already said, initially, that the invention applies to all the ovens that are compatible with the features, for example gas oven, electric oven or microwave oven.

[0044] This is true also for ovens made as separate appliances or parts of appliances such as common household kitchen ranges.

[0045] Anyway, all these embodiments take a part of the scope of the claims which follow.

[0046] Relating to what it was said above, it should be noted that the invention is not limited only to the support of quadrangular dripping pan as shown in the examples.

[0047] In fact, the invention also applies to shelf or containers in general, having not only polygonal shapes (e.g.

triangular, hexagonal, etc.) but also circular, elliptic or another complex configuration.

[0048] It's possible to think, for example, about backing pans made with ceramic material, or molds for cakes or similar, which are supported by a tray in which the quadrilateral frame 12, 12' is replaced by a frame having a shape matching with that one of such containers.

[0049] The containers must have an edge that engages with the frame, similarly to that of the dripping pan in the previous examples; preferably such edge will be projecting with respect to the container in a manner similar to a flange, so as to rest on the frame.

[0050] The tray will have, anyway, edges which engage in the guides, similar to the edges 17, 18, 17', 18' of the previous examples.

[0051] All these embodiments are part of the scope of the following claims.

Claims

1. A method for supporting a container (10; 10') in a muffle (1; 1') of an oven, comprising at least one pair of opposite walls (3, 4; 3', 4') in a cooking chamber (2; 2'), along which guides (30, 40; 30', 40') are provided for moving the container (10; 10'), **characterized in that** it comprises the following steps:

- i) providing a tray (11; 11') slidable along the guides (30, 40; 30', 40'), comprising a frame (12; 12') for supporting the container (10; 10');
- ii) extracting the tray (11; 11') at least partly from the cooking chamber (2; 2') by sliding it along the guides (30, 40; 30', 40');
- iii) coupling the container (10; 10') to the frame (12; 12') of the tray (11; 11');
- iv) introducing the tray with the container (10; 10') into the cooking chamber (2; 2') by sliding it along the guides (30, 40; 30', 40').

2. A method according to claim 1, wherein the sliding of the tray (11; 11') takes place in a substantially horizontal direction.

3. A method according to claim 1 or 2, wherein the container is a dripping pan (10; 10').

4. A method for extracting a container (10; 10') from a muffle (1; 1') of an oven, comprising at least one pair of opposite walls (3, 4; 3', 4') in a cooking chamber (2; 2'), along which guides (30, 40; 30', 40') are provided for moving the container (10; 10'), **characterized in that** it comprises the following steps:

- i) providing a tray (11; 11') slidable along the guides (30, 40; 30', 40'), comprising a frame (12;

- 12') for supporting the container (10; 10');
 ii) extracting the tray (11; 11') at least partly from the cooking chamber (2; 2') by sliding it along the guides (30, 40; 30', 40');
 iii) removing the container (10; 10') from the frame (12; 12') of the tray (11; 11') and extracting it from the muffle.
5. Oven comprising a muffle (1) wherein there is arranged a food cooking chamber (2), at least one pair of opposite walls (3, 4; 3', 4') in the cooking chamber (2; 2'), along which guides (30, 40; 30', 40') are provided for moving containers (10; 10') to and from the cooking chamber,
characterized in that it comprises a tray (11; 11') movable along said guides (30, 40; 30', 40') and comprising a frame (12; 12') associable with a container (10; 10');
6. Oven according to claim 5, wherein the tray comprises edges (17, 18; 17', 18') which slidably engage into the guides (30, 40; 30', 40') at a distance from the frame (12; 12').
7. Oven according to claim 5 or 6, wherein the tray (11; 11') comprises at least one curved end (17b, 18b; 17b', 18b') which, in a condition wherein it protrudes at least partly from the cooking chamber (2; 2'), cooperates with stopping means (32, 42; 19', 20') of the guides (30, 40; 30', 40') to keep the tray (11; 11') in a stable and substantially horizontal condition.
8. Oven according to any one of claims 5 to 7, wherein the tray (11; 11') is made of metal wire or the like.
9. Oven according to any one of claims 5 to 8, wherein the frame (12; 12') has a polygonal, circular, elliptic or another complex configuration.
10. Oven according to any one of claims 5 to 9, wherein the container (10; 10') is a dripping pan.
11. Oven according to any one of claims 5 to 10, wherein the guides (30, 40) comprise dimples on the side walls (3, 4; 3', 4') of the muffle.
12. Oven according to any one of claims 5 to 11, wherein the guides (30', 40') comprise metal wires applied to the side walls (3, 4) of the muffle.
13. Dripping pan for ovens, **characterized in that** it is associated with a frame (12; 12') of a support tray (11; 11') to be inserted into the oven.
14. Dripping pan according to claim 13, wherein the frame (12; 12') has smaller dimensions than the dripping pan, so that the edge of the latter will rest at least partly on the frame (12; 12').
15. Oven tray (11; 11') slidable along guides (30, 40; 30', 40') provided on the walls (3-6; 3'-6') of a muffle (2; 2') of an oven, **characterized in that** it comprises a frame (12; 12') associable with a container (10; 10'), and edges (17, 18; 17', 18') to be slidably engaged into guides (30, 40; 30', 40') provided on the walls of the muffle (2; 2') at a distance from the frame (12; 12'), said frame (12; 12') being preferably polygonal.
16. A tray according to claim 15, wherein the frame (12; 12') is polygonal.

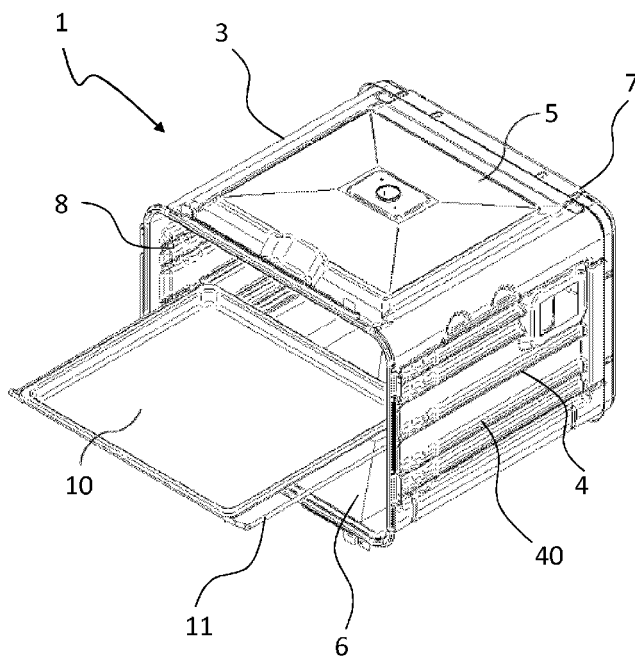


Fig. 1

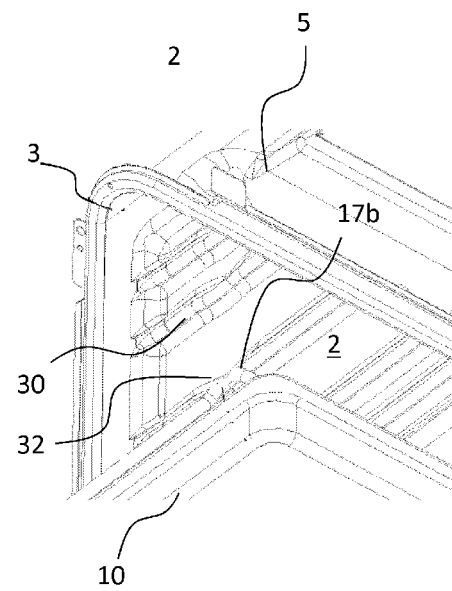


Fig. 2

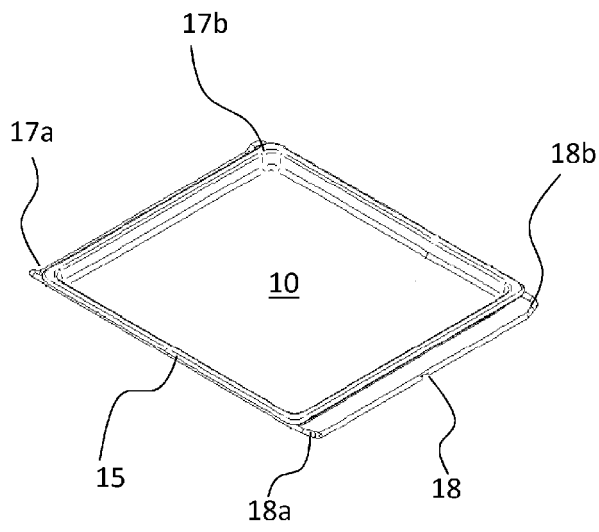


Fig. 3

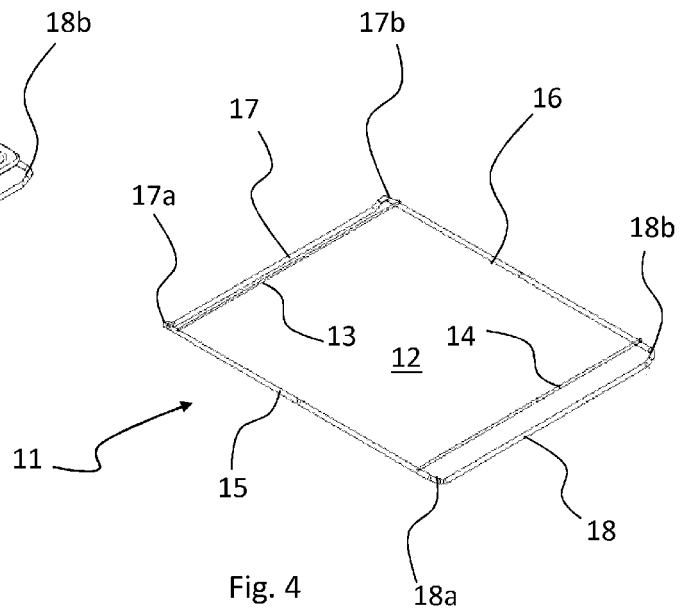


Fig. 4

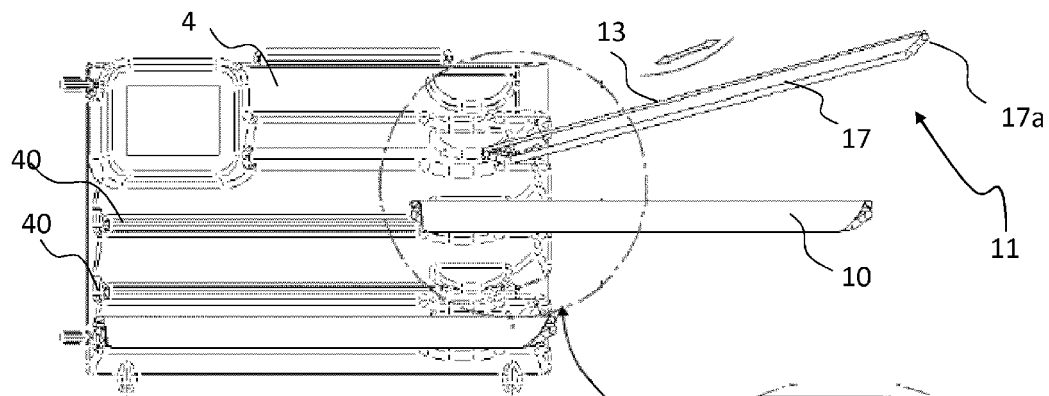


Fig. 5

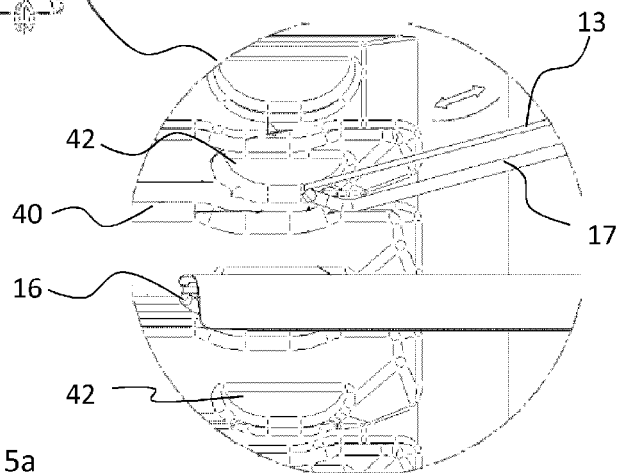


Fig. 5a

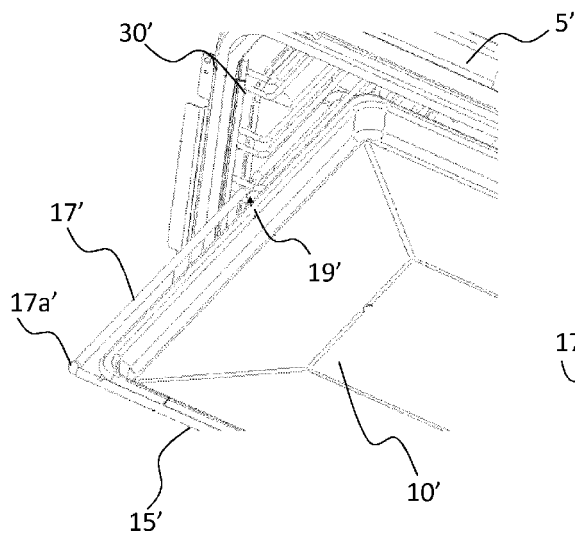


Fig. 6

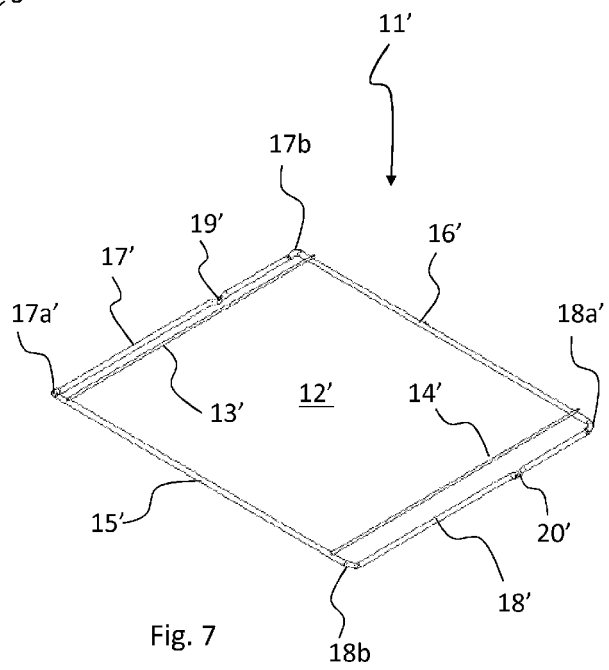


Fig. 7

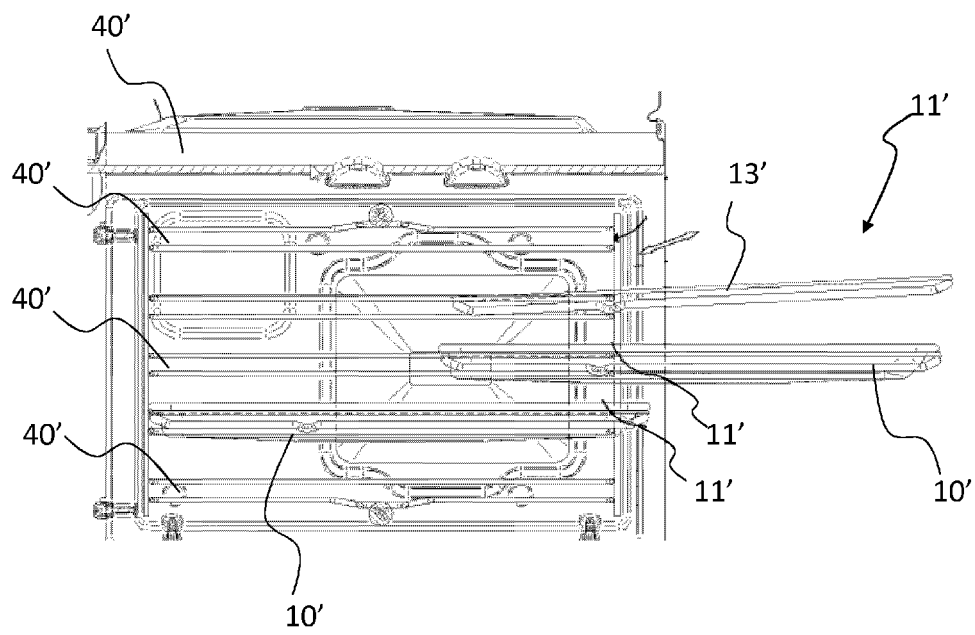


Fig. 8



EUROPEAN SEARCH REPORT

 Application Number
EP 14 15 5891

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	US 2 985 096 A (WOLSKE LAWRENCE E) 23 May 1961 (1961-05-23) * column 2, line 17 - column 5, line 21; figures 1-2 *	1-6, 8-10,12	INV. F24C15/16
X	US 2007/137501 A1 (MANUEL AARON J [US]) 21 June 2007 (2007-06-21) * paragraph [0027] - paragraph [0044]; figures 1-4 *	1,2,4-9, 11,12	
X	US 2009/188915 A1 (NODA TOMIMITSU [JP] ET AL) 30 July 2009 (2009-07-30) * paragraph [0115] - paragraph [0136]; figures 23-28 *	1-6,8-10	
X	US 2 847 932 A (MORE PHILIP J) 19 August 1958 (1958-08-19) * column 2, line 23 - column 4, line 50; figures 1-4 *	1-6,8-10	
			TECHNICAL FIELDS SEARCHED (IPC)
			F24C
The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
The Hague		16 April 2014	Makúch, Milan
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)



Application Number

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CLAIMS INCURRING FEES

The present European patent application comprised at the time of filing claims for which payment was due.

☐ Only part of the claims have been paid within the prescribed time limit. The present European search report has been drawn up for those claims for which no payment was due and for those claims for which claims fees have been paid, namely claim(s):

☐ No claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for those claims for which no payment was due.

LACK OF UNITY OF INVENTION

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

see sheet B

☐ All further search fees have been paid within the fixed time limit. The present European search report has been drawn up for all claims.

☐ As all searchable claims could be searched without effort justifying an additional fee, the Search Division did not invite payment of any additional fee.

☐ Only part of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the inventions in respect of which search fees have been paid, namely claims:

☒ None of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims, namely claims:

1-12

☐ The present supplementary European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims (Rule 164 (1) EPC).

**LACK OF UNITY OF INVENTION
SHEET B**

Application Number

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The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

1. claims: 1-12

a method for supporting (claims 1-3), respectively
extracting (claim 4), a container in and from an oven, and
an oven (claims 5-12) comprising a container

2. claims: 13, 14

an dripping pan

3. claims: 15, 16

an oven tray

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

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This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
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16-04-2014

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EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

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