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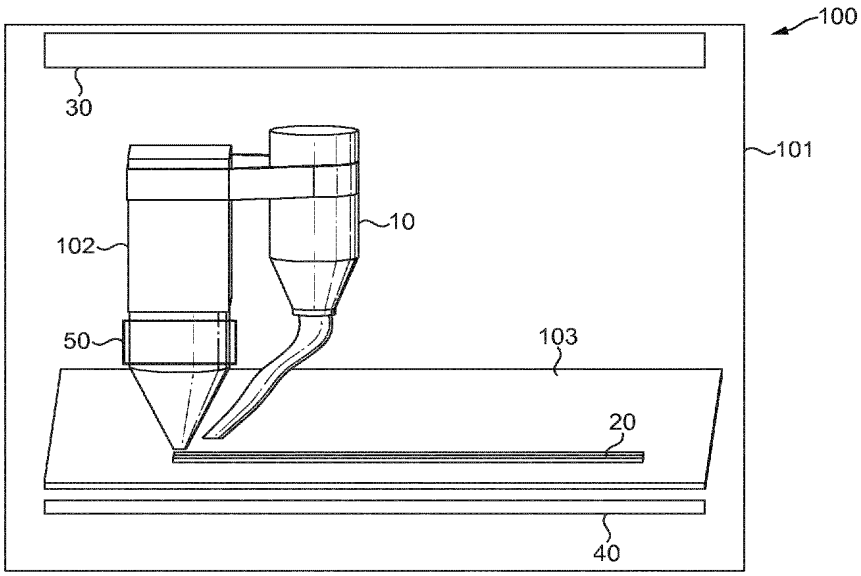

FIG. 1

(57) Abstract: The invention relates to a food processing system (100) able to deposit and/or deliver food under a certain pattern and to heat and/or cook it, wherein deposition is done onto a deposition surface (103) by at least a deposition head (102), such that the deposition surface (103) and the deposition head (102) are moveable relative to each other; the deposition head (102) comprising at least a heating means (10) attached thereto, adapted to heat the food deposited to its cooking temperature; the heating means (10) being attached to the deposition head (102) in such a way that they are able to cook at least a food fraction of the food pattern deposited either simultaneously to the deposition or successively to the deposition. The invention further relates to a method for preparing a foodstuff by using a food processing system (100) as described, wherein the heating means (10) are activated simultaneously to the food deposition to allow cooking at least a food fraction of the food pattern deposited or they are activated after the food deposition to allow cooking

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at least partly the deposited food pattern, the heating means (10) following the same deposition path followed by the deposition head (102) for the deposition of the food pattern.

Heating and/or cooking food processing system and associated method

Field of the invention

The present invention is directed to a system for processing food and, in particular, to a system allowing heating and/or cooking of a foodstuff, and further to a method associated to such system.

Background of the invention

At present, processed food is becoming more and more widely used in the pursit of saving time and efforts. However, the perception of processed food that many people have is that it is not sufficiently healthy and is not adequate for each person's needs. Therefore, present trends of processed foods require that it is made more healthy and adapted to each individual's needs, that it is more convenient and the least number of processing operations is required from the consumer and, even more, that the waste is minimised so only the quantity of food to be consumed is ideally prepared.

Currently, known processed foods are bought totally raw or partially cooked and need to be cooked at home by using traditional cooking devices, such as frying devices, microwaves, ovens or the like. The drawbacks of these standard solutions are that, on one side, the food bought is not adapted to the consumer's needs and, on the other side, the consumer has to still process and cook the food at home, so the complete process requires time, further devices and the result is not always satisfactory, which makes the whole process not convenient.

A possibility for preparing tailored food adapted to each individual's needs would be to directly configure, departing from raw ingredients, the food that will be further cooked into a ready-to-eat meal. A food processing system based on layer deposition and layer cooking by layers belonging to the applicant was already filed under EP 15166200.4. The aim of the present application is to disclose the heating and/or cooking means used in such a system in order to prepare the food product.

As it will be further described in detail, the present invention will heat and/or cook each of the layers deposited, one by one, using specific cooking profiles, so that the preparation of each one of the layers and therefore of the whole food product is made optimal, which is not the case at present in the known prior art.

Object and summary of the invention

According to a first aspect, the invention refers to a food processing system able to deposit and/or deliver food under a certain pattern and to heat and/or cook it: deposition is done onto a deposition surface by at least a deposition head, such that the deposition surface and the deposition head are moveable relative to each other. The deposition head comprises at least a heating means attached thereto, and adapted to heat the food deposited to its cooking temperature; the heating means being attached to the deposition head in such a way that they are able to cook at least a food fraction of the food pattern deposited either simultaneously to the deposition or successively to the deposition.

Typically, the food processing system of the invention further comprises cavity heating means adapted to heat the food deposited to a temperature below its cooking temperature.

The cavity heating means preferably comprise non-contact heating means, such as convection means, conduction means or electromagnetic radiation means, such as infrared radiation emitters or microwave radiation emitters.

According to another embodiment, the food processing system can further comprise base heating means adapted to heat the deposition surface to a temperature below the cooking temperature of the food deposited.

Typically, the deposition head is further provided with a heating block able to heat the product flowing through it prior to its deposition.

According to the invention, the deposited food pattern comprises one or a plurality of successively deposited layers. Typically, the cooking level of each one of the deposited layers depends on the heating energy provided by the heating means

and/or on the distance of the heating means to the deposition surface and/or on the type and/or velocity movement of the deposition head.

Preferably, according to the invention, the heating means comprises at least an air blower operable to direct a flow of hot air to the proximity of the outlet of the deposition head and/or in the direction of the food fraction of the food pattern to cook. Typically, the air blower comprises a fan and an electrical heating resistance.

According to the invention, the air flow provided by the air blower depends on the rotation speed of the fan, the air flow temperature depending on the electrical current through the heating resistance and on the air velocity.

Typically, steam is further provided in the proximity of the outlet of the deposition head, alternatively or simultaneously to the hot air flow by a moisture generator, a humidifier and/or a sprayer.

The deposition head preferably comprises a Z-stage device operable to adjust the distance of the outlet of the heating means attached thereto with respect to the deposited food pattern.

Preferably, the exit diameter of the air blower is adjustable in order to modify the food fraction surface of the food pattern deposited that is impacted.

According to the invention, the food processing system preferably further comprises a temperature sensor to determine the temperature of the hot air stream, the sensor being a contact sensor, such as a NTC, a thermocouple or a PT type probe sensor, and being arranged on the air blower and/or on the deposition head.

Besides, the food processing system can further comprise a moisture sensor to determine the moisture content of the air flow delivered.

Preferably, the food processing system of the invention further comprises a temperature sensor arranged on the deposition head and directed to the heated fraction of the deposited food pattern, preferably a non-contact sensor such as a pyrometer.

According to a second aspect, the invention relates to a method for preparing a foodstuff by using a food processing system as described: the heating means can

be activated simultaneously to the food deposition to allow cooking at least a food fraction of the food pattern deposited or they can be activated after the food deposition to allow cooking at least partly the deposited food pattern, the heating means following the same deposition path followed by the deposition head for the deposition of the food pattern.

In the method of the invention, the amount of heating energy provided by the heating means is preferably made proportional to the moisture content and/or to the viscosity and/or to the nature of the deposited food.

Typically, the cavity heating means are activated before, and/or simultaneously and/or after deposition of the food pattern by the deposition head.

Further, according to the invention, base heating means can be activated before, and/or simultaneously and/or after deposition of the food pattern by the deposition head.

Preferably, a heating block is activated simultaneously to deposition of the food pattern by the deposition head.

Brief description of the drawings

Further features, advantages and objects of the present invention will become apparent for a skilled person when reading the following detailed description of embodiments of the present invention, when taken in conjunction with the figures of the enclosed drawings.

Fig. 1 shows a general view of a heating and/or cooking device used in a food processing system according to the present invention.

Fig. 2 shows a possible configuration of a moisture generator used in a heating and/or cooking device used in a food processing system according to the present invention.

Fig. 3 shows another possible configuration of a moisture generator used in a heating and/or cooking device used in a food processing system according to the present invention.

Fig. 4 shows still another configuration of a moisture generator used in a heating and/or cooking device used in a food processing system according to the present invention.

Fig. 5 shows a variant of the heating and/or cooking device used in a food processing system according to the present invention comprising a Z-stage device operable to adjust the distance of the heating means with respect to the deposited food.

Detailed description of exemplary embodiments

According to a first aspect, the invention refers to *a heating and/or cooking food processing system 100*, which is able to deposit food under a certain pattern (typically by layers) and then cook or heat them according to a certain profile. Preferably, either at the same time or subsequently to deposition, each of the deposited layers 20 is heated or cooked, in a certain way, depending on the nature of the food deposited, and on the desired cooking of it.

The system 100 comprises a cooking chamber 101 inside of which the food is prepared. The food pattern, typically shaped as food layers 20, are deposited on a deposition surface 103, typically configured as a tray. The system of the invention effects deposition of the food or foodstuff by means of one or a plurality of deposition heads 102: typically, these deposition heads process a raw food product of depart, preferably in powder, hydrate and texturize it so that it is deposited as a dough or paste on the surface 103, in the shape of a layer 20: successive layers will typically be deposited over each other.

The system 100 of the invention further comprises heating means 10, typically an air blower, as shown in Figure 1, attached to the deposition head 102: these heating means are adapted to heat the food product or foodstuff to its cooking

temperature, and this would be done, according to the invention, layer by layer. Therefore, apated cooking will be done for each one of the layers deposited.

As further shown in Figure 1 attached, the system comprises cavity heating means 30, typically arranged on the upper side of the cooking chamber 101, for warming the food product to a temperature below its cooking temperature. Therefore, these cavity heating means 30 typically warm the inside of the chamber 101 so as to help the cooking of the food stuff deposited, preferably helping to reduce the total processing and cooking time, thus aiding in the cooking process, or bringing the food product to a serving temperature. Typically, these cavity heating means 30 are non-contact heating means, and they can be either convection means, conduction means or elementromagnetic radiation means, such as infrared radiation emitters (typically, an infrared heat lamp) or microwave radiation emitters. These cavity heating means 30, typically when configured as infrared radiation emitters, can also be used to provide a finish to the foodstuff product, typically a final browning of it.

The cavity heating means 30 can either warm the cooking chamber 101 before the layers are deposited, so as to help in their cooking, or it can warm the food product at the same time as it is being deposited on the deposition surface 103; another possibility is that the cavity heating means 30 are activated after the food product has been deposited, in order to keep it warm for a certain time, until its consumption, or for example for a final browing of it.

Besides, the system 100 of the invention can comprise base heating means 40 arranged in such a way as to heat or warm the deposition surface 103. These base heating means 40 can be any type of contact or non-contact heating means, adapted to heat the food product deposited on the deposition surface 103 to a temperature below its cooking temperature, in order to help in the cooking process, typically allowing shorter cooking times or allowing to keep the food product prepared warm.

Even when not shown, the system 100 of the invention is further provided with processing means, comprising a processor for executing specific computer program instructions and a controller for controlling that the system effectively acts according to these specific instructions. These instructions include the deposition of each of the layers 20 onto the surface 103 and the heating or cooking of each of them, controlling activation, power, time, etc. of the heating means 10, of the cavity heating means 30 and of the base heating means 40.

As schematically represented in Figure 1, the deposition head 102 is typically provided with a heating block 50 heating the food stuff (typically as dough or pasta) before it is dispensed onto the deposition surface 103. This heating block is typically a thermoblock. By heating the external surface of the deposition head 102 before the product exits it, the deposition of such viscous product is aided through this device, so that it can flow better through it.

In the system 100 of the invention, as represented schematically in Figure 1, deposition is done by at least a deposition head 102 which can be either fixed or can be moveable in any X, Y and/or Z direction. The head 102 can also be rotatable. The deposition surface 103 can also be fixed or moveable in any X, Y and/or Z direction, or it can also be made rotatable. According to the invention, the deposition head 102 and the deposition surface 103 are moveable with respect to each other, either being displaceable in any of X, Y and/or Z direction, or rotatable, any or both of them. The heating means 10 can either be simultaneously activated at the same time as deposition takes place, or successively, after the deposition, typically of each food layer 20.

As shown in any of Figures 1-5 of the invention, the heating means 10 attached to the deposition head 102, preferably configured as an air blower, are arranged in such a way as a direct flow of hot air can be directed towards the food fraction of the food layer 20 deposited to be heated to its cooking temperature. Therefore, the arrangement of the air blower is such as to allow directing the flow of hot air toward specific fractions of the food layer to heat. These Figures show a possible execution wherein the air blower comprises a directional hose delivering air towards the area desired. The air blower typically comprises a fan and an electrical heating resistance, such that the air flow temperature depends on the electrical current through the heating resistance and on the air velocity, and the air flow provided by the air blower depends on the rotation speed of the fan.

By attaching the hot air blower to the deposition head, it is possible to guaranty a constant delivery of the heat energy (W/cm^2) as it is directly dependent of the distance between the hose outlet of the air blower and the food layer to be heated.

As described, the hot air blower is made of a fan which drives the air flow towards an electrical heating resistance, which thus transfers the heating energy to

the air flow. The temperature can be adjusted by acting on the electrical current delivered to the heating resistance. The air flow can be adjusted by varying the rotational speed of the fan: thus, it is possible to adjust both the heating temperature and the air flow.

As represented in Figures 2, 3 or 4, the deposition head 102 typically further comprises a moisture generator 60, typically a sprayer or humidifier adding steam and/or water to the proximity of the outlet of the deposition head, alternatively or simultaneously to the hot air flow. This aids moisturizing the hot air flow so that the food product does not dry excessively, and its moisture level can be controllable, so that it is avoided that any thin skin is formed on the top of the food product and may act as a thermal barrier thus preventing the food volume below the formed skin to be cooked. The desired texture of the food product can be controlled by varying the amount of steam, the level of the air temperature and the level of air flow.

As another possibility of the invention, not only water and/or steam but also micro and/or macro nutrients can be added, and further salt and/or sugar, so they are delivered together with the steam and/or water at certain parts of the food pattern deposited, so it can be deposited in a focalized manner.

Figures 2, 3 and 4 show three different possible configurations of such a moisture generator. Figure 2 shows a water pipe 61 placed perpendicularly to the air flow from the air blower, where water is extracted and introduced in the air flow by Venturi effect. Another possible configuration is shown in Figure 3, where a separated steam generator 60 is assembled to the hot air blower, wherein a steam hose 62 is connected to the hot air hose in the air blower. The third possible configuration is shown in Figure 4, wherein two adjacent hoses are provided, one for delivering the hot air in the air blower, and another one for delivering the steam, a steam pipe 63.

With the configuration shown in Figure 2, the water is directly evaporated in the hot air flow stream thus generating a steam. The amount of moisture or steam is then controlled by the water flow rate and by the amount of heat generated by the blower. This is the simplest construction as it does not require a thermoblock to heat the water and to generate the steam.

With the configuration shown in Figure 3, steam is transported via a hose up to the end of the hot air blower hose. The advantage of this configuration is the mixing of both the hot air with the steam and focused on one point on the food surface.

With the third configuration shown in Figure 4, the two media are physically separated, thus allowing a perfect control of the moisture level and of the temperature on the food surface.

Figure 5 shows a Z-stage device 70 attached to the deposition head 102, operated by a motor 71, and which will be responsible for adapting the distance between the food delivered by the head 102 and the heating element 10. Preferably, the configuration of the invention works with a certain distance (not varied) of the exit of the deposition head 102 with respect to the deposition surface 103. However, thanks to the Z-stage device 70, the distance of the heating means 10 with respect to the deposition surface 103 can be adjusted depending on the desired heating or cooking level.

The hot air blower used as heating means 10 in the system of the invention constitutes a very convenient and affordable cooking technique, with common components on the market that are widely used in various other fields. Only a fan with an electrical wired resistor is required. For the most advanced devices, the air velocity can be adjusted by varying the voltage applied to the electrical motor of the fan and the temperature can be independently adjusted by varying the electrical current applied to the electrical resistance.

Another parameters that will contribute to the cooking is the displacement velocity of the air blower on top of the surface. If a soft cooking is required without the browning of the food surface then a relative high velocity of the head displacement will be required. Thus two cooking strategies can be applied to the displacement of the head. The first one being to cook directly the deposited food at the same velocity of the displacement of the deposition head or the second one being to wait the deposition head to form the complete food in one or a plurality of layers and then to pass on top of it with the hot air blower. With such technology and due to the fact that the air blower is attached to the deposition head, no additional and complex displacement mechanism is required to cook the deposited layer.

The focalisation of the hot air and therefore the heat energy by unit of surface (W/cm^2) can be controlled by adjusting the outlet diameter of the hot air hose and by adjusting the distance between the outlet of the hot air hose and the surface of the deposited food. For this, a simple Z-stage device 70 can be added along the body of the deposition head on which the hot air hose will be attached and will be able to move up or down relative to the deposition head.

The last parameter that can be controlled is the moisture of the hot air that is blown. A simple water pipe with a controlled flow rate can be added thus allowing the regulation of the moisture of the hot air. Another alternative as described above is to add a separate hose from which a steam is generated thus allowing a soft cooking for the most delicate food ingredient. Thus several combinations of both the steam generator and the hot air blower can be used to cook the deposited food layer.

Each configuration can be controlled via a temperature and or a moisture sensor or a combination of both. The sensors can be located in the pipes or hoses thus giving a direct measurement feedback of the air parameters delivered and can also be used to properly regulate each parameter (fan speed and heating resistor temperature, typically).

The temperature sensor can be located directly in the hoses and can be a NTC, a thermocouple or a PT type probe sensor. The temperature of the food can be measured or monitored via a pyrometer which can be placed at a relative high distance from the hot air delivery and orthogonal to the food surface. The pyrometer can also be attached to the deposition head measuring the temperature of the food surface just after the steam or hot air blower.

According to a second aspect, the invention further relates to *a method for preparing a foodstuff* by using a food processing system 100 as the one previously described. The heating means 10 can be activated either simultaneously to the food deposition to allow cooking at least a food fraction of the food pattern deposited or the heating means 10 can be activated after the food deposition to allow cooking at least partly the deposited food pattern. Typically, as the heating means 10 are attached to the deposition head 102, they follow the same deposition path followed by the deposition head 102 for the deposition of the food pattern.

In the method of the invention, the amount of heating energy provided by the heating means is made proportional to the moisture content and/or to the viscosity and/or to the nature of the deposited food.

According to the invention, different heating means can be used either successively or simultaneously to cook at least partly the deposited food pattern. The cavity heating means 30 and the base heating means 40 can also be operated before, at the same time and/or after the deposition of the food product on the deposition surface 103.

Typically, the method of the invention comprises different steps, such as those described herewith:

- the deposition head 102 deposits a first layer 20 of foodstuff onto the deposition surface 103;
- the heating means 10 can be simultaneously activated and follow the deposition of the foodstuff at the same time the deposition head 102 is acting, or they can be activated after the deposition head has deposited the layer 20, typically following the same path, being possible that they are continuously activated, so they can heat or cook all the layer deposited, or they can be intermittently activated, therefore cooking only certain parts of it, being also possible that the path followed is not the same, so different parts of the layer deposited are cooked or a certain pattern out of it;
- the cavity heating means 30 and/or the base heating means 40 can also be activated at the same time the deposition is being done, so as to aid the cooking;
- during deposition, the heating block 50 of the deposition head 102 can also be activated in order to help deposition of the food stuff;
- the same procedure as explained above can be repeated a plurality of times, for different successive layers to be deposited, one over the other;
- it is also possible to activate the cavity heating means 30 at the end of the process in order to obtain, for example, a final browning of the last layer deposited.

Although the present invention has been described with reference to preferred embodiments thereof, many modifications and alternations may be made by a person having ordinary skill in the art without departing from the scope of this invention which is defined by the appended claims.

Claims

1. Food processing system (100) able to deposit and/or deliver food under a certain pattern and to heat and/or cook it, wherein deposition is done onto a deposition surface (103) by at least a deposition head (102), such that the deposition surface (103) and the deposition head (102) are moveable relative to each other;

   the deposition head (102) comprising at least a heating means (10) attached thereto, adapted to heat the food deposited to its cooking temperature;

   wherein the heating means (10) are attached to the deposition head (102) in such a way that they are able to cook at least a food fraction of the food pattern deposited either simultaneously to the deposition or successively to the deposition.

2. Food processing system according to claim 1, further comprising cavity heating means (30) adapted to heat the food deposited to a temperature below its cooking temperature.

3. Food processing system according to claim 2, wherein the cavity heating means (30) comprise non-contact heating means, such as convection means, conduction means or electromagnetic radiation means, such as infrared radiation emitters or microwave radiation emitters.

4. Food processing system according to any of the previous claims, further comprising base heating means (40) adapted to heat the deposition surface (103) to a temperature below the cooking temperature of the food deposited.

5. Food processing system according to any of the previous claims, wherein the deposition head (102) is further provided with a heating block (50) able to heat the product flowing through it prior to its deposition.

6. Food processing system as per any of the previous claims, wherein the deposited food pattern comprises one or a plurality of successively deposited layers (20).

7. Food processing system as per claim 6, wherein the cooking level of each one of the deposited layers (20) depends on the heating energy provided by the heating means (10) and/or on the distance of the heating means (10) to the deposition surface (103) and/or on the type and/or velocity movement of the deposition head (102).

8. Food processing system as per any of the previous claims, wherein the heating means (10) comprises at least an air blower operable to direct a flow of hot air to the proximity of the outlet of the deposition head (102) and/or in the direction of the food fraction of the food pattern to cook.

9. Food processing system as per claim 8, wherein the air blower comprises a fan and an electrical heating resistance.

10. Food processing system as per claim 9, wherein the air flow provided by the air blower depends on the rotation speed of the fan, the air flow temperature depending on the electrical current through the heating resistance and on the air velocity.

11. Food processing system as per any of claims 8-10, wherein steam and/or water is further provided in the proximity of the outlet of the deposition head (102), alternatively or simultaneously to the hot air flow by a moisture generator, a humidifier and/or a sprayer.

12. Food processing system as per claim 11, wherein the steam and/or water further comprises micro and/or macro nutrients and/or salt and/or sugar.

13. Food processing system as per any of the previous claims, wherein the deposition head (102) comprises a Z-stage device (70) operable to adjust the distance of the outlet of the heating means (10) attached thereto with respect to the deposited food pattern.

14. Food processing system as per any of claims 8-13, wherein the exit diameter of the air blower is adjustable in order to modify the food fraction surface of the food pattern deposited that is impacted.

15. Food processing system as per any of claims 8-14, further comprising a temperature sensor to determine the temperature of the hot air stream, the

sensor being a contact sensor, such as a NTC, a thermocouple or a PT type probe sensor, and being arranged on the air blower or on the deposition head (102).

16. Food processing system as per any of claims 8-15, further comprising a moisture sensor to determine the moisture content of the air flow delivered.

17. Food processing system as per any of the previous claims, further comprising a temperature sensor arranged on the deposition head (102) and directed to the heated fraction of the deposited food pattern, preferably a non-contact sensor such as a pyrometer.

18. Method for preparing a foodstuff by using a food processing system (100) according to any of the previous claims, wherein the heating means (10) are activated simultaneously to the food deposition to allow cooking at least a food fraction of the food pattern deposited.

19. Method for preparing a foodstuff by using a food processing system (100) according to any of claims 1-16, wherein the heating means (10) are activated after the food deposition to allow cooking at least partly the deposited food pattern, the heating means (10) following the same deposition path followed by the deposition head (102) for the deposition of the food pattern.

20. Method according to any of claims 18-19 wherein the amount of heating energy provided by the heating means (10) is made proportional to the moisture content and/or to the viscosity and/or to the nature of the deposited food.

21. Method according to any of claims 18-20 wherein cavity heating means (30) are activated before, and/or simultaneously and/or after deposition of the food pattern by the deposition head (102).

22. Method according to any of claims 18-21 wherein base heating means (40) are activated before, and/or simultaneously and/or after deposition of the food pattern by the deposition head (102).

23. Method according to any of claims 18-22 wherein a heating block (50) is activated simultaneously to deposition of the food pattern by the deposition head (102).

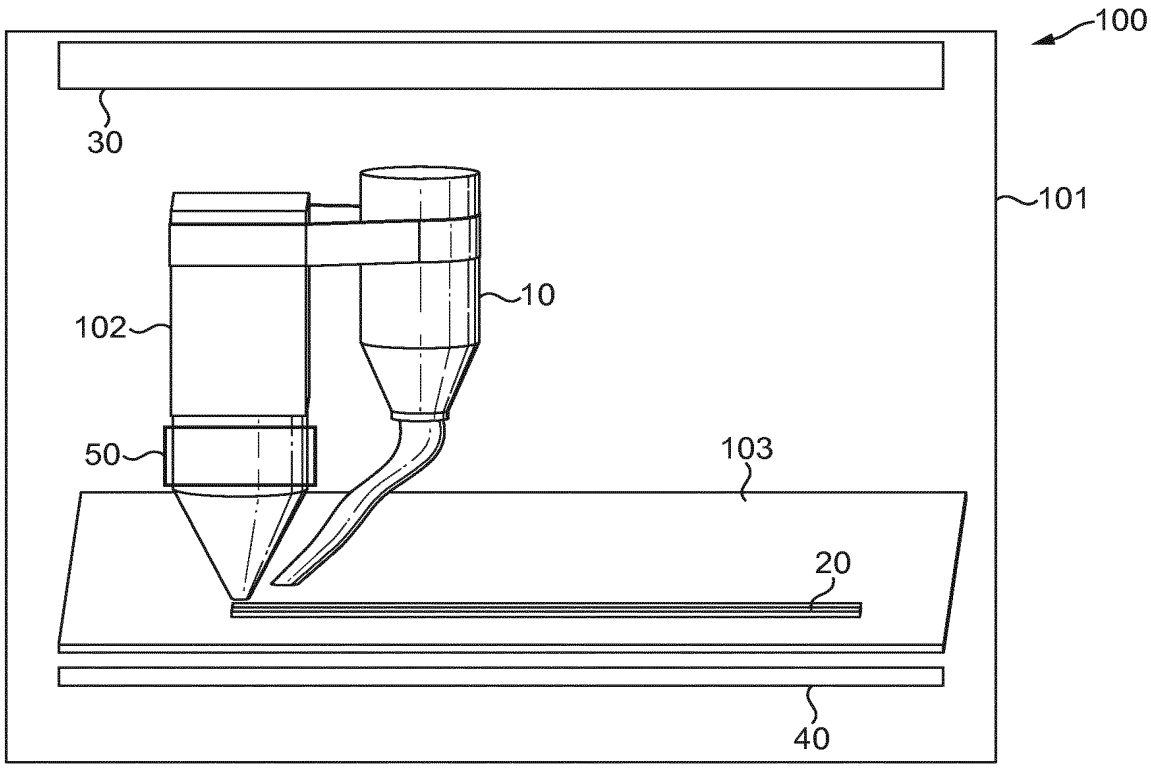

FIG. 1

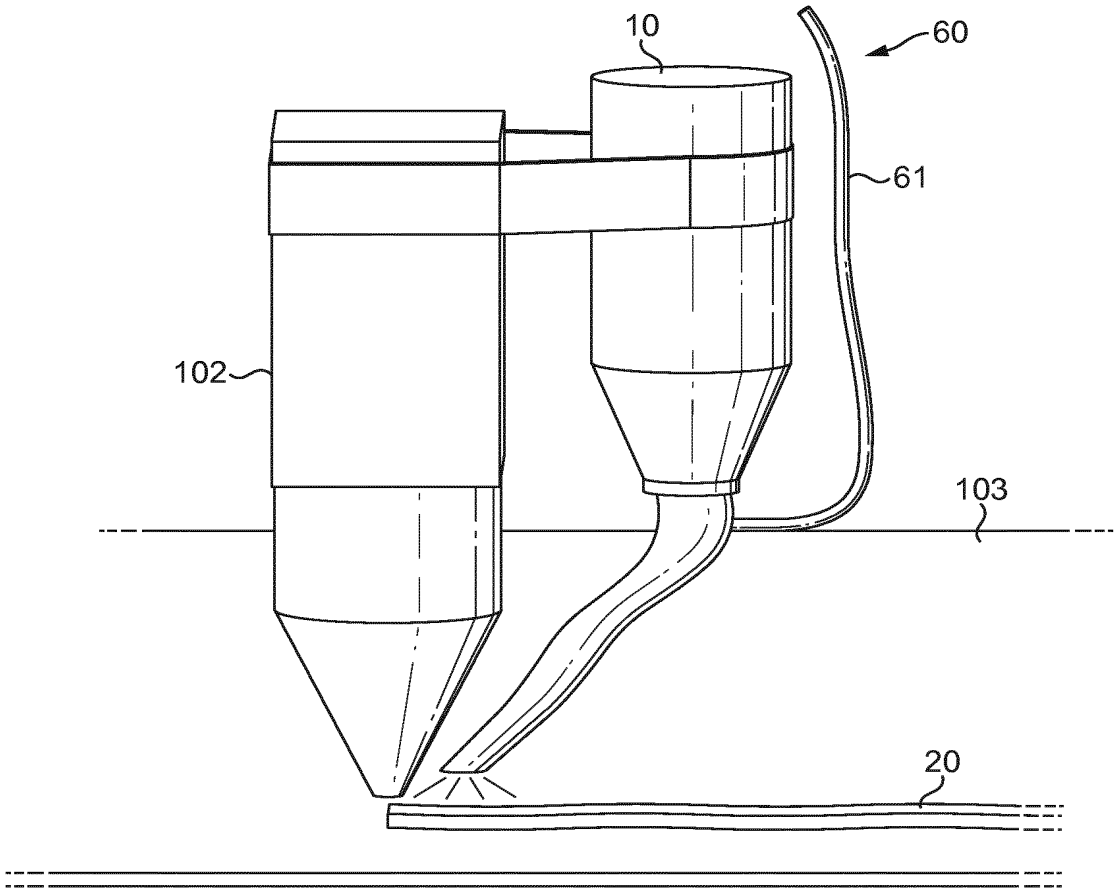

FIG. 2

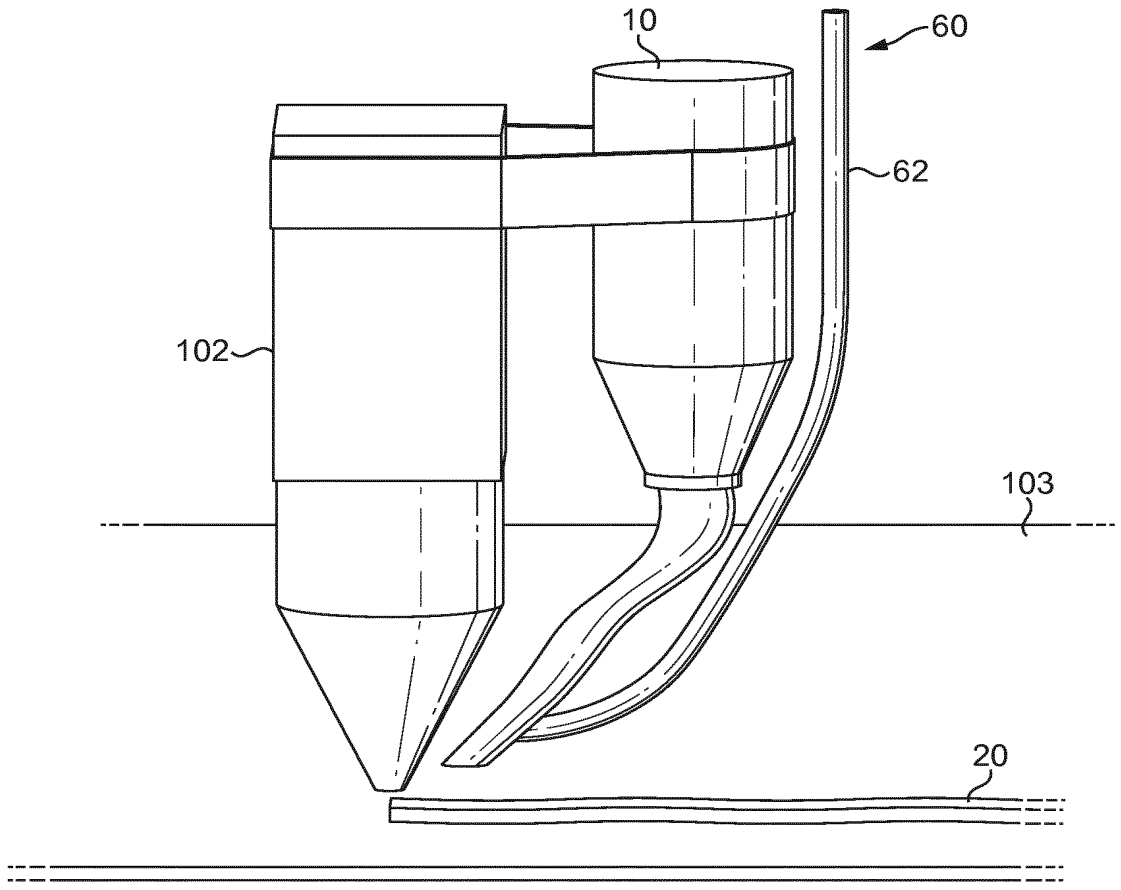

FIG. 3

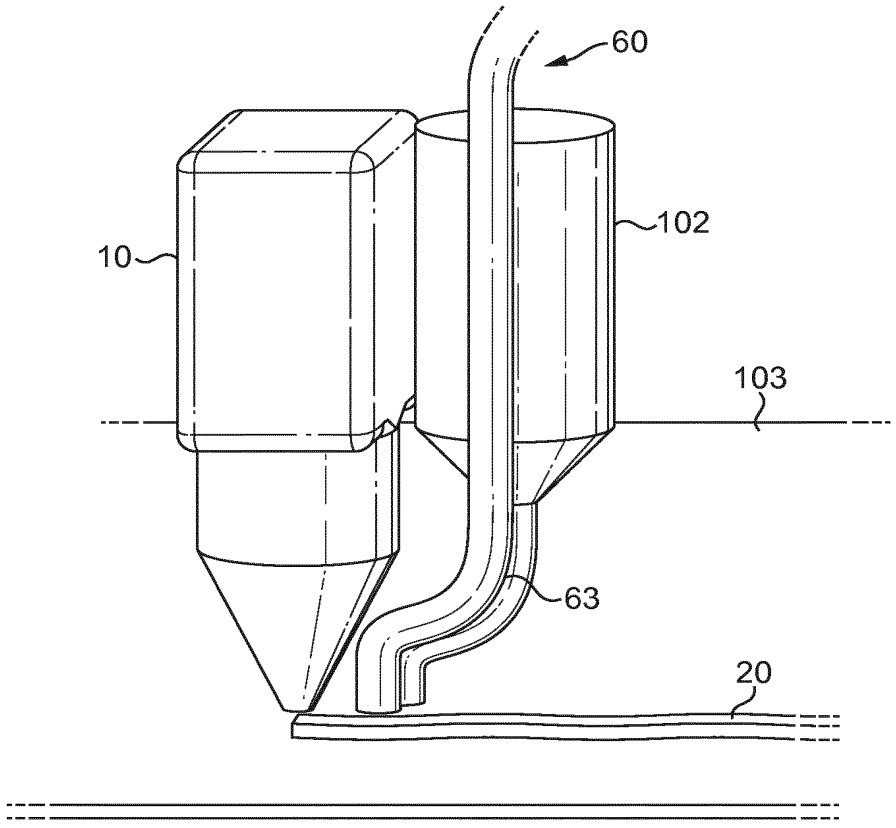

FIG. 4

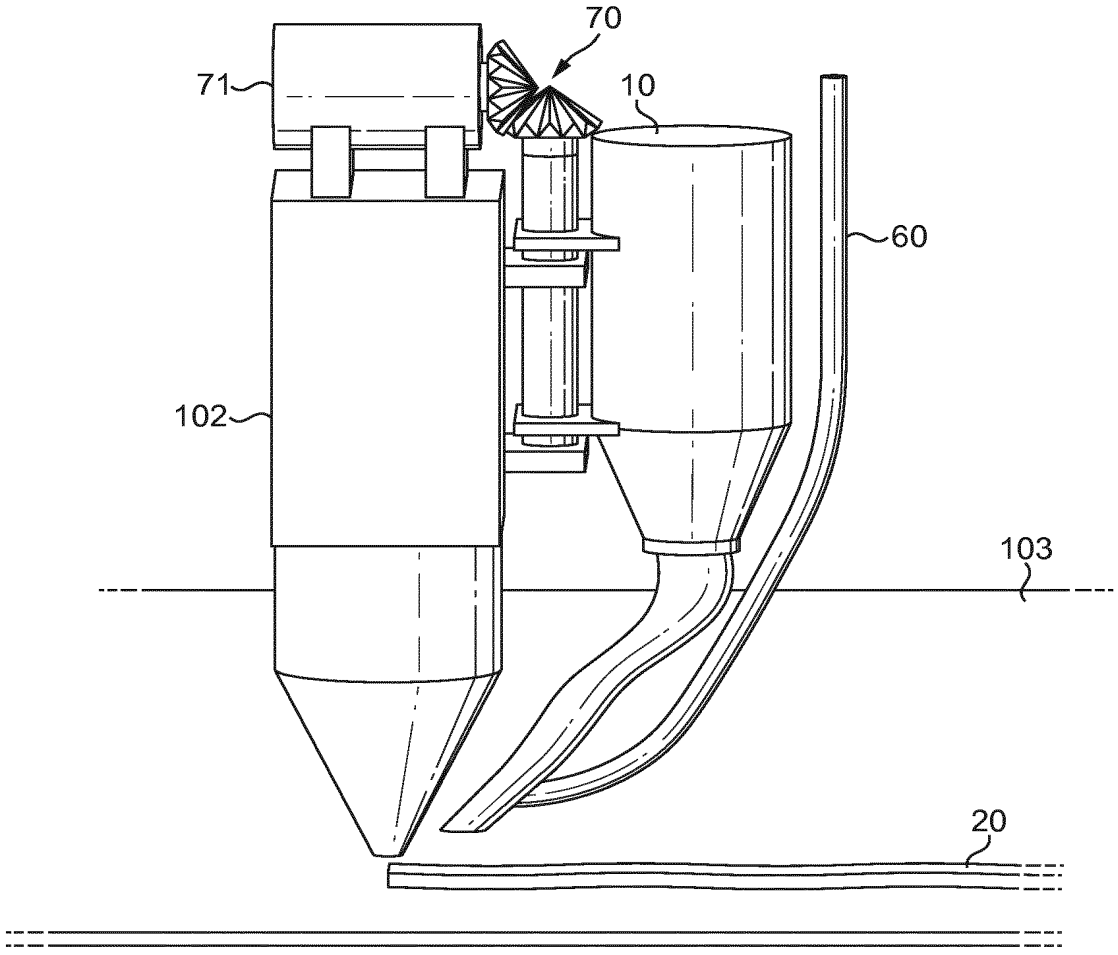

FIG. 5

INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2017/067183

A. CLASSIFICATION OF SUBJECT MATTER
INV. A23P20/20
ADD.

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
A23P

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 2012/103005 A2 (UNIV CORNELL [US]; LIPTON JEFFREY I [US]; LIPSON HOD [US]) 2 August 2012 (2012-08-02) abstract; claims 1,9,10; figure 1 page 3, line 25 - line 31 page 4, line 24 - page 5, line 11 page 6, line 4 - page 8, line 11; figures 6-11	1-23
Y	US 6 280 784 B1 (YANG JUNSHENG [US] ET AL) 28 August 2001 (2001-08-28) column 6, line 30 - line 67; claims 1,2,16,32,33; figures 1,2,4 column 9, line 64 - line 67	1-23

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[X] Further documents are listed in the continuation of Box C.

[X] See patent family annex.

* Special categories of cited documents :

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"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

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"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
16 October 2017	27/10/2017

Name and mailing address of the ISA/	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Gaiser, Markus

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INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2017/067183

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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X,P	WO 2016/177628 A1 (NESTEC SA [CH]) 10 November 2016 (2016-11-10) abstract; claims 1-4,9,13 page 5, line 35 - page 10, line 16; figures 1,3,4,6,7 -----	1-23
A	WO 2006/020685 A2 (CORNELL RES FOUNDATION INC [US]) 23 February 2006 (2006-02-23) paragraph [0136]; claims 1,24,49; figures 1,2,5,7 -----	1-23
A	US 2013/034633 A1 (VON HASSELN KYLE WILLIAM [US]) 7 February 2013 (2013-02-07) abstract; figures 1,7 paragraph [0047] - paragraph [0049] paragraph [0117] - paragraph [0121] -----	1-23

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INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/EP2017/067183

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US 2013034633 A1	07-02-2013	NONE	