Abstract: The present invention relates to an aroma extraction device (1) comprising a body (2), at least one boiling chamber (3) provided in the body (2), in which the aroma source placed within is boiled and evaporated, a heater (8) enabling heating of the liquid placed in the boiling chamber (3), a condensation chamber (4) in which the vapor rising from the boiling chamber (3) is collected and condensed to a liquid phase, a cooler (5) cooling the walls of the condensation chamber (4), a channel (6) provided in the lower portion of the condensation chamber (4), through which the condensed water and aroma flows, and a valve (7) provided on the channel (6).
Description

AN AROMA EXTRACTION DEVICE

[0001] The present invention relates to an aroma extraction device in which the aromas of scented flowers, fruits or plants are extracted through distillation by boiling method.

[0002] Users desire to extract aromas of plants, flowers or fruits and vegetables such as lemons or oranges in order to obtain pleasant odors or for the purpose of health. Devices with such intent are present in the art. In the devices in which aroma extraction is performed with condensation/distillation method, yield is low due to the fact that aroma is less than water. In addition, aromas of not all materials such as plants or fruits can be obtained with high quality through normal boiling process.


[0004] State of the art Chinese patent application no. CN101362983 mentions a method enabling extraction of oils in citrus fruits.


[0006] State of the art Japanese patent application no. JP2014214276 mentions a method providing the obtaining of citrus fruit oil in a low cost manner.

[0007] State of the art Chinese patent application no. CN105713730 mentions a method providing the obtaining of high quality aroma.

[0008] The aim of the present invention is to realize an aroma extraction device in which aromas from materials whose aromas are to be extracted, are extracted in effective and efficient manner and through which high quality aroma is obtained.

[0009] The aroma extraction device realized to achieve the aim of the present invention and disclosed in the claims comprises a control unit determining a boiling temperature according to the nature of the material whose aroma is to be extracted, and enabling keeping of the temperature close to the determined boiling temperature by controlling the heater. After the user enters the nature of the material using the panel of the aroma extraction device, the control unit determines the boiling temperature according to
data preserved in its memory by the producer.

[0010] In an embodiment of the invention, the control unit determines the boiling duration according to the nature of the material. Accordingly, aroma extraction yield and aroma quality is improved by boiling each material for different durations. In a version of this embodiment, the control unit enables turning the heater off at the end of the determined boiling duration.

[0011] In another embodiment of the invention, the control unit enables weight measurement of the materials placed in the boiling chamber by means of a weight sensor arranged preferably in the lower portion of the boiling chamber, and determines the amount of water required for the aroma extraction process according to the measured material weight. The determined water amount is displayed on the panel of the aroma extraction device, prompting the user to fill the determined amount of water to the boiling chamber.

[0012] In another embodiment of the invention, the control unit adjusts the pressure in the boiling chamber by means of pressure control means enabling adjusting the pressure in the boiling chamber, according to the nature and the amount of the material whose aroma is to be extracted. Improving the quality of the aroma is intended with this embodiment.

[0013] In another embodiment of the invention, the control unit enables controlling the humidity in the boiling chamber by means of humidity control means adjusting the humidity in the boiling chamber, according to the nature and the amount of the material whose aroma is to be extracted. The quality of the aroma is improved with this embodiment.

[0014] In the aroma extraction device of the invention, high quality aroma is obtained with high yield by controlling factors affecting the aroma quality and the yield in the extraction process, such as temperature, duration, material-water proportion, pressure and humidity.

[0015] The aroma extraction device realized to achieve the aims of the present invention is illustrated in the accompanying drawings, wherein:

[0016] Figure 1 is a perspective view of an aroma extraction device.

[0017] Figure 2 is a perspective view of inside of the aroma extraction device in
an embodiment of the invention.

[0018] The elements in the figures are numbered individually and the correspondence of these numbers are given hereinafter.

1. Aroma extraction device
2. Body
3. Boiling chamber
4. Condensation chamber
5. Cooler
6. Channel
7. Valve
8. Heater
9. Control unit
10. Weight sensor
11. Pressure control means
12. Humidity control means

[0019] The aroma extraction device (1) comprises a body (2), at least one boiling chamber (3) provided in the body (2), in which the aroma source placed within is boiled and evaporated, a heater (8) enabling heating of the liquid placed in the boiling chamber (3), a condensation chamber (4) in which the vapor rising from the boiling chamber (3) is collected and condensed to a liquid phase, a cooler (5) cooling the walls of the condensation chamber (4), a channel (6) provided in the lower portion of the condensation chamber (4), through which the condensed water and aroma flow, and a valve (7) provided on the channel (6).

[0020] In the aroma extraction device (1), the user places the items whose aromas he/she desires to extract, with an amount of water in the boiling chamber (3). Afterwards, the boiling chamber (3) is heated by means of the heater (8) and water is brought to a boiling temperature. Upon boiling of water, the aroma of items such as plants or flowers evaporate with water. The water and aroma mixture in gaseous phase rises upwards as its density decreases, and is directed to the condensation chamber (4). Vapor condenses by shifting from gaseous phase to liquid phase upon colliding the walls of the condensation chamber (4) which are cooler than
the boiling chamber (3) thanks to the cooler (5). The condensed water and aroma mixture seeps and flows into the channel (6). The aroma with a density lower than the density of water, stays above the water. Upon opening the valve (7), first water and then the aroma are discharged out of the channel (6), preferably to a container placed at the outlet of the valve (7) by the user.

[0021] The aroma extraction device (1) of the invention comprises a control unit (9) determining the temperature of the liquid in the boiling chamber (3) and controlling the heater (8) according to the nature of the material whose aroma is to be extracted. In order to effectively extract the aroma of the material whose aroma is to be extracted, the material is required to be boiled at a distinct temperature according to the nature of the material. For instance, one material releases its aroma in water at 70°C, and thus its aroma effectively shifts to gaseous phase and evaporates, another material releases its aroma in water at 90°C. Therefore, boiling water always at the same temperature may not give effective results each time. In the aroma extraction device (1) of the invention, the user marks the nature of the material whose aroma he/she wants to extract, by means of the panel (not shown in figures) provided on the aroma extraction device (1), and the control unit (9) controls the heater (8) according to the temperature information saved in its memory, obtained through numerous experiments performed by the producer, depending on the nature of the material entered by the user.

[0022] In an embodiment of the invention, the control unit (9) determines the working duration of the heater (8) according to the nature of the material whose aroma is to be extracted. In this embodiment, the control unit (9) controls the heater (8) and also informs the user about the duration, according to the information over aroma extraction process duration required for materials of different nature, obtained through numerous experiments performed by the producer and presaved in its memory by the producer. For instance, the most efficient manner to extract the aroma of the mint plant is boiling it in water at a certain temperature for 3 hours, but for the lavender plant, boiling at a certain temperature for 1 hour is
sufficient to obtain its aroma in the most efficient manner.

[0023] In another embodiment of the invention, the control unit (9) enables turning the heater (8) off after completion of the determined working duration of the heater (8). In this embodiment, the control unit (9) enables termination of the aroma extraction process by turning the heater (8) off upon completion of the boiling duration required for the respective material, saved in its memory. The quality of aroma decreases in case of boiling longer than the duration enabling extraction of the aroma of the material in the most efficient manner. Therefore, with this embodiment the boiling process is completed almost on the right time, preventing the aroma to lose its quality.

[0024] In another embodiment of the invention, the aroma extraction device (1) comprises a weight sensor (10) enabling weight measurement of the materials placed in the boiling chamber (3), and the control unit (9) determines the amount of water to be added to the boiling chamber (3) according to the information it receives from the weight sensor (10). The amount of water required to boil the material whose aroma is to be extracted, has an important role in obtaining a high quality aroma. The producer determines the amount of water required to boil according to the amount, in other words the weight of the material whose aroma is to be extracted as a result of numerous experiments performed, and saves this to the memory of the control unit (9). The user places the material whose aroma he/she wants to extract, in the boiling chamber (3), and the weight sensor (10) measures the weight of the material. The control unit (9) determines the amount of water required from the material weight - water amount table presaved in its memory, according to the material weight information it receives from the weight sensor (10), and displays it to the user by means of the panel on the aroma extraction device (1). The user fills the boiling chamber (3) with water of required amount he/she sees on the panel. The boiling chamber (3) is preferably transparent, and a measure is provided on its side surfaces. The user can fill the boiling chamber (3) with water of required amount using the measure.

[0025] In another embodiment of the invention, the aroma extraction device (1)
comprises pressure control means (11) enabling adjustment of the pressure in the boiling chamber (3), and the control unit (9) determines the pressure in the boiling chamber (3) and controls the pressure of the boiling chamber (3) by means of pressure control means (11) according to the nature of the material whose aroma is to be extracted. It is necessary to control the pressure in the boiling chamber (3) in order to obtain aroma in a high quality and efficient manner. Particularly, controlling the pressure plays a critical role for the materials requiring boiling under 100°C which is the boiling temperature of water. The pressure has to be reduced sufficiently so that the desired amount of evaporation occurs. In this embodiment, the pressure in the boiling chamber (3) can be adjusted by means of pressure control means (11), and the control unit (9) controls the pressure in the boiling chamber (3) by means of pressure control means (11) according to the material and pressure information predetermined by the producer.

[0026] In another embodiment of the invention, the aroma extraction device (1) comprises humidity control means (12) enabling adjustment of the humidity in the boiling chamber (3), and the control unit (9) determines the humidity in the boiling chamber (3) and controls the humidity of the boiling chamber (3) by means of humidity control means (12) according to the nature of the material whose aroma is to be extracted. In parallel with the above-mentioned embodiments, also the amount of humidity in the boiling chamber (3) has to be controlled in order to obtain high quality aroma. The humidity control means (12) adjusts the humidity in the boiling chamber (3), and the control unit (9) controls the humidity in the boiling chamber (3) by means of humidity control means (12) according to material and humidity information predetermined by the producer.

[0027] The aroma extraction device (1) of the invention enables obtaining high quality aroma with high yields with respect to the available material amount. High quality aroma is obtained by means of the control unit (9) determining the liquid temperature and the boiling duration in the boiling chamber (3) according to the nature of material. Likewise, the amount of water in the boiling process is determined according to the weight of the
material in order to obtain aroma efficiently. The control unit (9) also controls other factors such as pressure and humidity, enabling the aroma to be of high quality.
Claims

1. An aroma extraction device (1) comprising a body (2), at least one boiling chamber (3) provided in the body (2), in which the aroma source placed within is boiled and evaporated, a heater (8) enabling heating of the liquid placed in the boiling chamber (3), a condensation chamber (4) in which the vapor rising from the boiling chamber (3) is collected and condensed to a liquid phase, a cooler (5) cooling the walls of the condensation chamber (4), a channel (6) provided in the lower portion of the condensation chamber (4), through which the condensed water and aroma flows, and a valve (7) provided on the channel (6), characterized by a control unit (9) determining the temperature of the liquid in the boiling chamber (3) and controlling the heater (8) according to the nature of the material whose aroma is to be extracted.

2. An aroma extraction device (1) according to claim 1, characterized by the control unit (9) determining the working duration of the heater (8) according to the nature of the material whose aroma is to be extracted.

3. An aroma extraction device (1) according to claim 2 characterized by the control unit (9) enabling the heater (8) to be turned off after completion of the determined working duration of the heater (8).

4. An aroma extraction device (1) according to any one of the preceding claims, characterized by a weight sensor (10) enabling weight measurement of the materials placed in the boiling chamber (3), and by the control unit (9) determining the amount of water to be added to the boiling chamber (3) according to the information it receives from the weight sensor (10).

5. An aroma extraction device (1) according to any one of the preceding claims, characterized by pressure control means (11) enabling adjustment of the pressure in the boiling chamber (3), and by the control unit (9) determining the pressure in the boiling chamber (3) according to the nature of the material whose aroma is to be extracted and controlling the pressure of the boiling chamber (3) by means of pressure control means (11).

6. An aroma extraction device (1) according to any one of the preceding claims, characterized by humidity control means (12) enabling adjustment of the humidity in the boiling chamber (3), and by the control unit (9) determining the humidity in the boiling chamber (3) according to the nature of the material
whose aroma is to be extracted and controlling the humidity of the boiling chamber (3) by means of humidity control means (12).
**INTERNATIONAL SEARCH REPORT**

**PCT/EP2017/077621**

### A. CLASSIFICATION OF SUBJECT MATTER

- **INV.** A23L27/10
- **C11B9/02**
- **A47J27/21**

**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)
  - A23L
  - C11B
  - A47J

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**, **WP**i Data

### C. DOCUMENTS CONSIDERED TO BE RELEVANT

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<td>CA 2 681 816 AI (LIN WEI-CHIH [CN]) 7 April 2011 (2011-04-07) page 5, lines 40-44; figure 1</td>
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- Further documents are listed in the continuation of Box C.
- See patent family annex.

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### Date of the actual completion of the international search

5 January 2018

### Date of mailing of the international search report

22/01/2018

### Name and mailing address of the ISA

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Authorized officer

Saunders, Thomas
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