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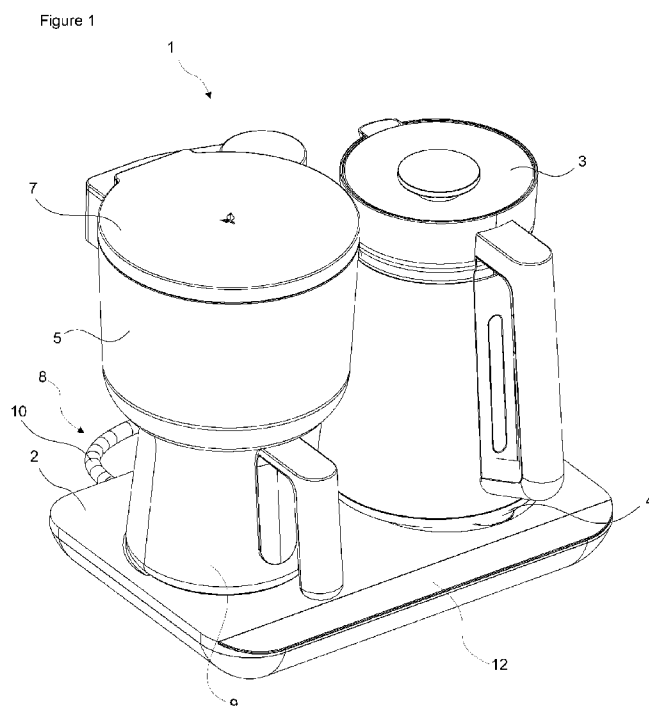
(71) Applicant: ARCELIK ANONIM SIRKETI [TR/TR];

Sutluce Karaagac Caddesi No: 2/6 Beyoglu, 34445 ISTANBUL (TR).

(72) Inventors: **KAYISDAG, Varol**; E5 Ankara Asfalti Uzeri, Tuzla, 34950 ISTANBUL (TR). **MUTLUDOGAN, Mehmet**; E5 Ankara Asfalti Uzeri, Tuzla, 34950 ISTANBUL (TR). **OZTURK, Tansel**; E5 Ankara Asfalti Uzeri, Tuzla, 34950 ISTANBUL (TR). **OZBEK, Hale**; E5 Ankara Asfalti Uzeri, Tuzla, 34950 ISTANBUL (TR). **TOSUN, Isa**; E5 Ankara Asfalti Uzeri, Tuzla, 34950 ISTANBUL (TR).

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(54) Title: A HOT BEVERAGE PREPARATION MACHINE



(57) Abstract: The present invention relates to a hot beverage preparation machine (1) comprising a body (2); a water reservoir (3) wherein water is filled; a water heater (4) enabling the water in the water reservoir (3) to be heated; a brewing chamber (5) wherein the raw material of the beverage to be prepared is put and whereto the water heated in the water reservoir (3) is transferred, wherein the brewing process is performed as a result of the interaction between the raw beverage material and water; a nozzle (6) which delivers the water into the brewing chamber (5); a cover (7) for isolating the brewing chamber (5) from the outer environment; a housing (8) which is situated on the body (2), under the brewing chamber (5); and a pot (9) which is placed into the housing (8), the top surface thereof being at least partially open and whereto the beverage brewed in the brewing chamber (5) is transferred.

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Description**A HOT BEVERAGE PREPARATION MACHINE**

- [0001] The present invention relates to a hot beverage preparation machine for automatically preparing beverages.
- [0002] In hot beverage preparation machines, the water filled into the water reservoir is heated by a water heater and is transferred to the brewing chamber containing raw beverage material to be prepared. The brewing process is performed in the brewing chamber as a result of the interaction between the raw beverage material and water. The brewed beverage is afterwards transferred into a pot and served. The period of time the raw beverage material interacts with the water is one of the important parameters which define the brew strength, hence the taste of the beverage. In the state of the art, machines are known which carry out brewing process for certain periods of time as per user selection. After staying in the brewing chamber for a certain period of time, the beverage is transferred into the pot. The water is transferred into the brewing chamber through a single opening. However, in order to brew various beverages such as coffee and some herbal teas in a tasty and efficient manner, the water must slowly wet the entire raw beverage material. Otherwise, the entire raw beverage material in the brewing chamber cannot be brewed.
- [0003] In the state of the art Patent Document No. JPH0687740, a hot beverage preparation machine is disclosed, wherein the raw beverage material is wetted by means of the spraying member.
- [0004] The aim of the present invention is the realization of a hot beverage preparation machine wherein the brewing efficiency is increased.
- [0005] The hot beverage preparation machine realized in order to attain the aim of the present invention and explicated in the claims, comprises a body; a water reservoir which is placed onto the body and wherein the brewing water is heated; a brewing chamber wherein the brewing process is performed as a result of the interaction between raw beverage material and water; a nozzle for delivering the heated water into the brewing chamber; a cover which cuts off the contact between the brewing chamber

and the outer environment; a housing which is situated on the body; and a pot which is situated on the housing so as to allow the beverage brewed in the brewing chamber to be distilled therein. When the brewing process is completed, the hot beverage is distilled from the brewing chamber to the pot and separated from the raw beverage material. Thus, the taste of the beverage obtained momentarily during the brewing process is kept for a longer time and the beverage is prevented from getting stale.

[0006] The hot beverage preparation machine of the present invention comprises a nozzle which is a fluidic oscillator. The nozzle is provided on the brewing chamber. By means of the nozzle, the water is enabled to be delivered onto the raw beverage material. As the nozzle is a fluidic oscillator, the water is delivered onto the raw beverage material by being dispersed. Thus, the raw beverage material is enabled to be homogeneously wetted. Consequently, the brewing quality is improved.

[0007] In an embodiment of the present invention, the hot beverage preparation machine comprises a delivery line which delivers the water heated in the water reservoir into the brewing chamber and the nozzle which delivers the water received from the delivery line onto the raw beverage material with periodic oscillation motion. By means of the periodic oscillation motion, the water is homogeneously dispersed over the raw beverage material.

[0008] In an embodiment of the present invention, the hot beverage preparation machine comprises the nozzle having an opening which enables the water to be dispersed without increasing the surface area thereof. Since the surface area of the water is not increased while being dispersed, the water reaches the raw beverage material without any temperature decrease.

[0009] In an embodiment of the present invention, the hot beverage preparation machine comprises a weight sensor which is provided on the brewing chamber and a control unit which determines the oscillation amplitude of the water depending on the data received from the weight sensor. By means of the weight sensor, the weight of the raw beverage material put into the brewing chamber is measured, which is used to determine the amount predefined in the control unit by the producer. In order to

determine the area to be swept by the nozzle depending on the raw beverage material, the oscillation amplitude of the water is adjusted.

- [0010] In an embodiment of the present invention, the hot beverage preparation machine comprises an image capturing device which is provided on the brewing chamber. By means of the image capturing device, the amount of the raw beverage material is determined. Thus, the oscillation amplitude of the water is determined by the control unit depending on the area to be swept.
- [0011] In an embodiment of the present invention, the hot beverage preparation machine comprises the control unit which adjusts the oscillation amplitude of the water depending on the type of the raw beverage material put into the brewing chamber. When coffee is put into the brewing chamber the oscillation amplitude of the water increases, and when tea is put the oscillation amplitude of the water decreases.
- [0012] By means of the present invention, a hot beverage preparation machine is realized, comprising a nozzle which is a fluidic oscillator for delivering the water into the brewing chamber with oscillation motion.
- [0013] The hot beverage preparation machine realized in order to attain the aim of the present invention is illustrated in the attached figures, where:
- [0014] Figure 1 - is the perspective view of the hot beverage preparation machine.
- [0015] Figure 2 - is the partial cross-sectional view of the hot beverage preparation machine.
- [0016] Figure 3 - is the perspective view of the nozzle.
- [0017] The elements illustrated in the figures are numbered as follows:
1. Hot beverage preparation machine
 2. Body
 3. Water reservoir
 4. Water heater
 5. Brewing chamber
 6. Nozzle
 7. Cover
 8. Housing

- 9. Pot
- 10. Delivery line
- 11. Weight sensor
- 12. Control unit
- 13. Image capturing device
- 14. Opening

[0018] The hot beverage preparation machine (1) comprises a body (2); a water reservoir (3) wherein water is filled; a water heater (4) enabling the water in the water reservoir (3) to be heated; a brewing chamber (5) wherein the raw material of the beverage to be prepared is put and whereto the water heated in the water reservoir (3) is transferred, wherein the brewing process is performed as a result of the interaction between the raw beverage material and water; a nozzle (6) which delivers the water into the brewing chamber (5); a cover (7) for isolating the brewing chamber (5) from the outer environment; a housing (8) which is situated on the body (2), under the brewing chamber (5); and a pot (9) which is placed into the housing (8), the top surface thereof being at least partially open and whereto the beverage brewed in the brewing chamber (5) is transferred. The water heated in the water reservoir (3) is transferred into the brewing chamber (5). Thus, the raw beverage material in the brewing chamber (5) is wetted. The beverage brewed in the brewing chamber (5) is transferred to the pot (9) and becomes ready to be served.

[0019] The hot beverage preparation machine (1) of the present invention comprises the nozzle (6) which is provided on the brewing chamber (5) and which is a fluidic oscillator for delivering the water onto the raw beverage material. By means of the motion generated by the characteristics of the fluidic oscillator, the water is delivered into the brewing chamber (5) by being dispersed. Thus, the raw beverage material is homogeneously wetted, increasing the brewing quality.

[0020] In an embodiment of the present invention, the hot beverage preparation machine (1) comprises a delivery line (10) with one end on the water reservoir (3) and the other end on the nozzle (6), which provides the delivery of the water heated in the water reservoir (3) to the brewing

chamber (5), and the nozzle (6) which delivers the water received from the delivery line (10) onto the raw beverage material with periodic oscillation motion. The nozzle (6) enables the water received from the delivery line (10) to be transferred into the brewing chamber (5). By means of the nozzle (6), the water is dispersed into the brewing chamber (5) with periodic oscillation motion.

[0021] In an embodiment of the present invention, the hot beverage preparation machine (1) comprises the nozzle (6) having a circular opening (14) which enables the water to be dispersed onto the raw beverage material without increasing the surface area thereof. By means of the circular cross-section of the opening (14), the water is delivered into the brewing chamber (5) with increasing the surface area thereof. Since the surface area of the water does not increase, the water does not lose any heat, and the water is delivered into the brewing chamber (5) at the same temperature it has when received from the delivery line (10). Consequently, the quality of the beverage is improved.

[0022] In an embodiment of the present invention, the hot beverage preparation machine (1) comprises a weight sensor (11) which is provided on the brewing chamber (5) and which measures the weight of the raw beverage material to determine the amount of thereof and a control unit (12) which determines the oscillation amplitude of the nozzle (6) depending on the data received from the weight sensor (11). By means of the weight sensor (11), the weight of the raw beverage material put into the brewing chamber (5) is determined. The weight data is transmitted to the control unit (12) and compared with the weight data predefined into the control unit (12) by the producer, thus determining the amount of the raw beverage material. The resulting amount enables the oscillation amplitude of the water to be determined. Thus, when a smaller amount of raw beverage material is put, the oscillation amplitude of the water is decreased. Consequently, the water is prevented from dispersing in an uncontrolled manner.

[0023] In an embodiment of the present invention, the hot beverage preparation machine (1) comprises an image capturing device (13) which is provided on the brewing chamber (5) and which images the amount of the raw

beverage material and the control unit (12) which determines the oscillation amplitude of the nozzle (6) depending on the data received from the image capturing device (13). By means of the image capturing device (13), the amount of the raw beverage material put into the brewing chamber (5) is determined. The data received from the image capturing device (13) is transmitted to the control unit (12). Said data is compared with the image data predefined into the control unit (12) by the producer, thus determining the amount of the raw beverage material. The resulting amount enables the oscillation amplitude of the water to be determined.

[0024] In an embodiment of the present invention, the hot beverage preparation machine (1) comprises the control unit (12) which provides the detection of different types of raw beverage materials, thus decreasing or increasing the oscillation amplitude of the water to find the suitable value for the detected raw beverage material. The control unit (12) increases the oscillation amplitude when coffee is put as raw beverage material and decreases the oscillation amplitude when tea is put as raw beverage material. While brewing coffee, it is important for the water to homogeneously wet the entire raw coffee material. Thus, the entire flavor of the raw coffee material is transferred into the water, resulting in an efficient brewing process. Since the distribution amplitude of the water is not important when tea is put into the brewing chamber (5), the oscillation amplitude of the water can be decreased.

[0025] By means of the present invention, a hot beverage preparation machine (1) is realized, comprising a nozzle (6) which is a fluidic oscillator for delivering the water into the brewing chamber (5) with periodic oscillation motion. By homogeneously dispersing the water into the brewing chamber (5), the brewing quality is improved.

Claims

1. A hot beverage preparation machine (1) **comprising**
 - a body (2);
 - a water reservoir (3) wherein water is filled;
 - a water heater (4) enabling the water in the water reservoir (3) to be heated;
 - a brewing chamber (5) wherein the raw material of the beverage to be prepared is put and whereto the water heated in the water reservoir (3) is transferred, wherein the brewing process is performed as a result of the interaction between the raw beverage material and water;
 - a nozzle (6) which delivers the water into the brewing chamber (5);
 - a cover (7) for isolating the brewing chamber (5) from the outer environment;
 - a housing (8) which is situated on the body (2), under the brewing chamber (5); and
 - a pot (9) which is placed into the housing (8), the top surface thereof being at least partially open and whereto the beverage brewed in the brewing chamber (5) is transferred,**characterized by** the nozzle (6) which is provided on the brewing chamber (5) and which is a fluidic oscillator for delivering the water onto the raw beverage material.
2. A hot beverage preparation machine (1) as in Claim 1, **characterized by** a delivery line (10) with one end on the water reservoir (3) and the other end on the nozzle (6), which provides the delivery of the water heated in the water reservoir (3) to the brewing chamber (5), and the nozzle (6) which delivers the water received from the delivery line (10) onto the raw beverage material with periodic oscillation motion.
3. A hot beverage preparation machine (1) as in Claim 1 or Claim 2, **characterized by** the nozzle (6) having a circular opening (14) which enables the water to be dispersed onto the raw beverage material without increasing the surface area thereof.
4. A hot beverage preparation machine (1) as in any one of the above claims, **characterized by** a weight sensor (11) which is provided on the brewing chamber (5) and which measures the weight of the raw beverage material to determine the amount of thereof and a control unit (12) which determines the

oscillation amplitude of the water depending on the data received from the weight sensor (11).

5. A hot beverage preparation machine (1) as in any one of the above claims, **characterized by** an image capturing device (13) which is provided on the brewing chamber (5) and which images the amount of the raw beverage material and the control unit (12) which determines the oscillation amplitude of the water depending on the data received from the image capturing device (13).
6. A hot beverage preparation machine (1) as in any one of the above claims, **characterized by** the control unit (12) which provides the detection of different types of raw beverage materials, thus decreasing or increasing the oscillation amplitude of the water to find the suitable value for the detected raw beverage material.

Figure 1

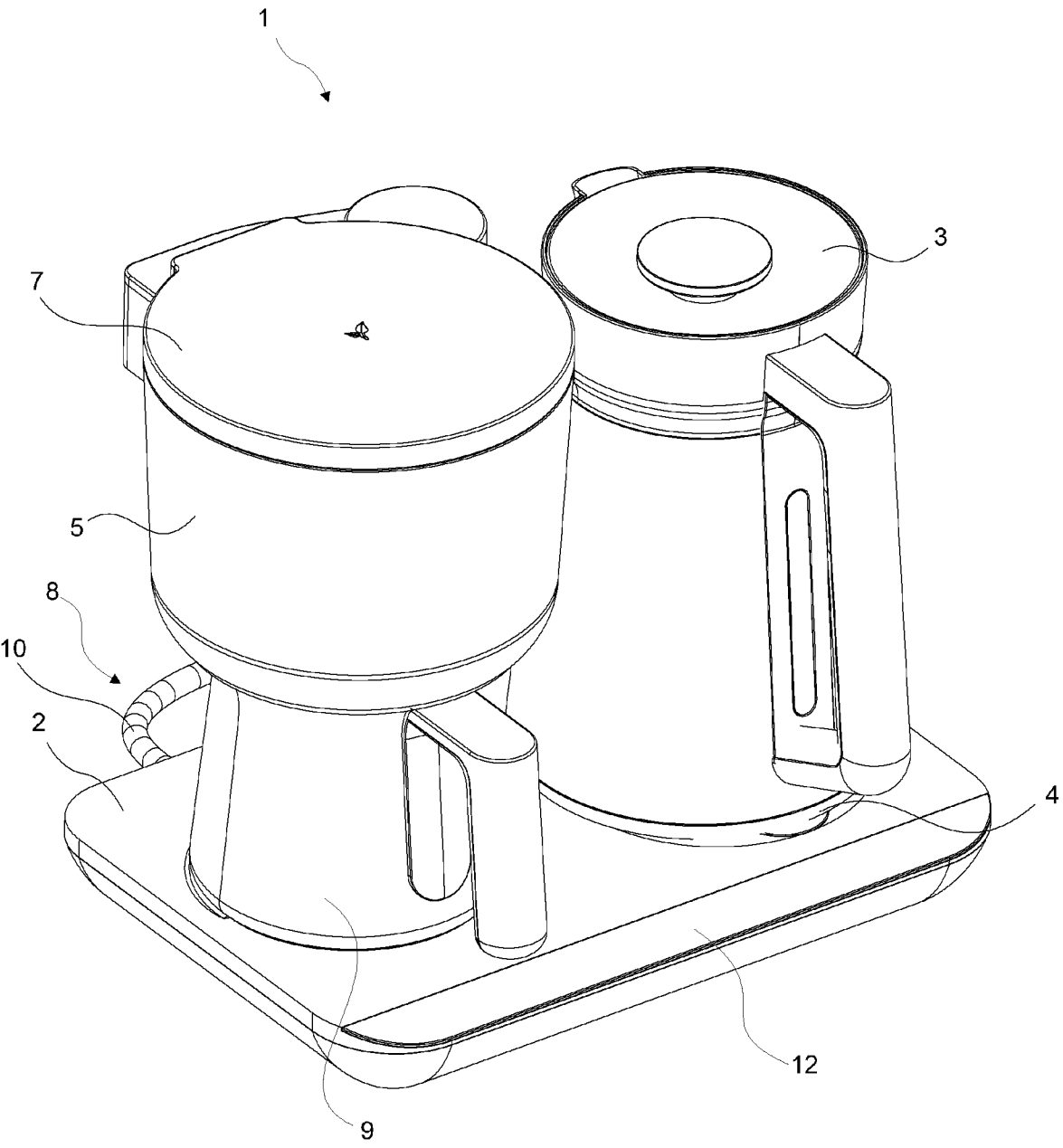


Figure 2

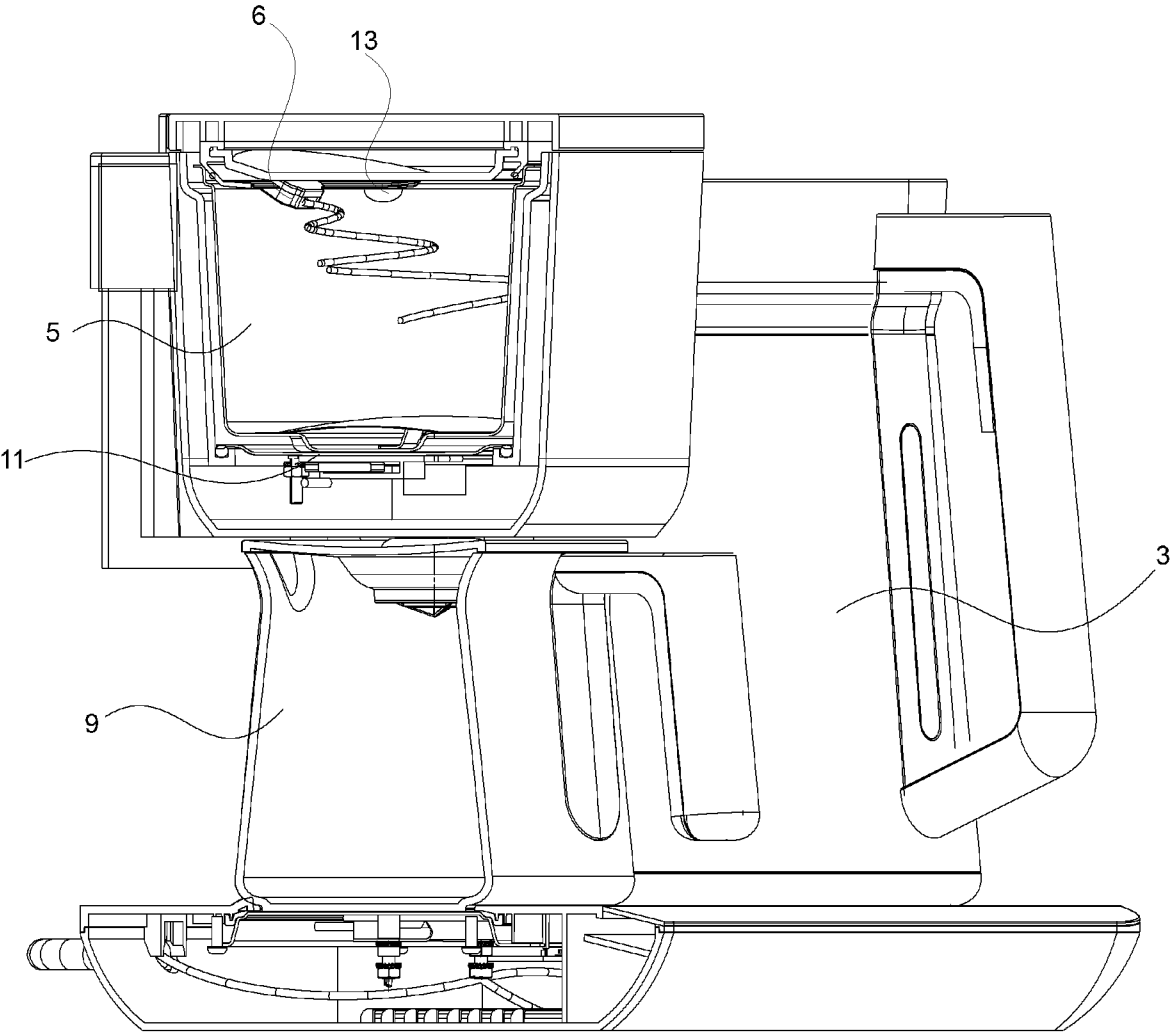
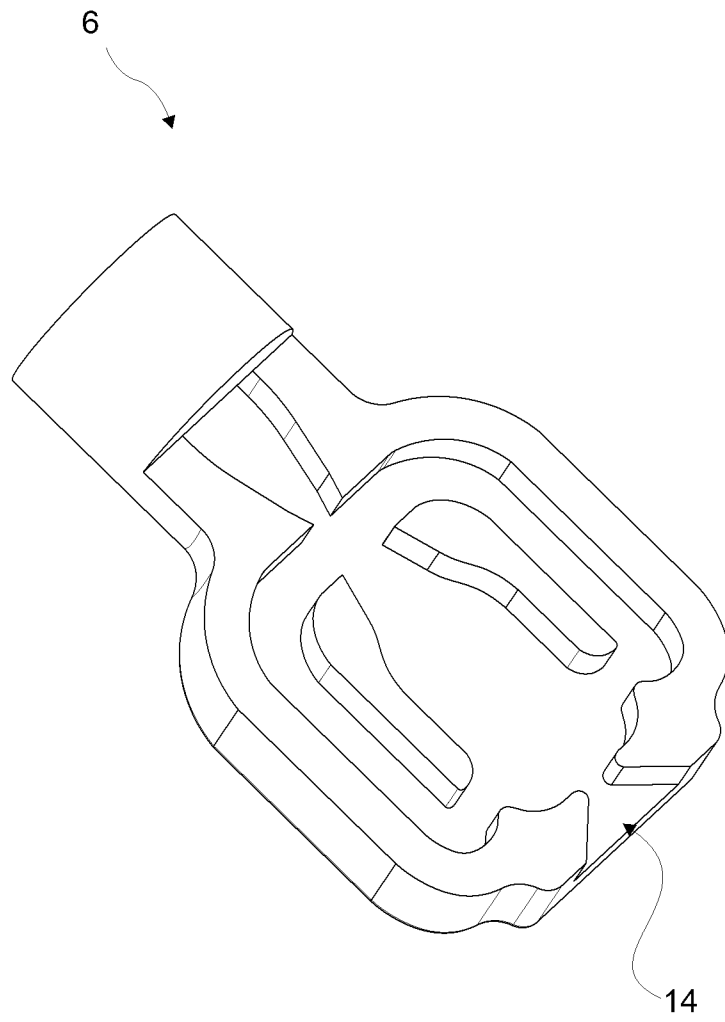


Figure 3



INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2020/050285

A. CLASSIFICATION OF SUBJECT MATTER

INV. A47J31/057 A47J31/52 A47J31/44
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)
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, 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	US 2015/327717 A1 (BURROWS BRUCE D [US]) 19 November 2015 (2015-11-19)	1-3
A	paragraphs [0037] - [0044], [0087] - [0089]; figures 1,2,17	6
A	----- DE 10 2008 014838 B3 (BROD WERNER [DE]) 10 September 2009 (2009-09-10)	4
A	paragraphs [0006], [0007], [0008], [0046] - [0071]; figures	5
A	----- WO 2008/148787 A1 (ARCELIK AS [TR]; CAGLAR TALIP [TR]; FESLIGIL ONDER [TR]) 11 December 2008 (2008-12-11)	5
A	paragraphs [0028] - [0041]; figures	5
A	----- WO 2006/008583 A1 (ARCELIK AS [TR]; HAZIR SEFA [TR] ET AL.) 26 January 2006 (2006-01-26)	5
	paragraphs [0014] - [0022]; figures	



Further documents are listed in the continuation of Box C.



See patent family annex.

* Special categories of cited documents :

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Date of the actual completion of the international search

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European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040,
Fax: (+31-70) 340-3016

Authorized officer

De Terlizzi, Marino

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

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