



- (51) **International Patent Classification:**
A47J 27/086 (2006.01)
- (21) **International Application Number:**
PCT/IB2018/055811
- (22) **International Filing Date:**
02 August 2018 (02.08.2018)
- (25) **Filing Language:** English
- (26) **Publication Language:** English
- (30) **Priority Data:**
201721027526 02 August 2017 (02.08.2017) IN
- (72) **Inventor; and**
- (71) **Applicant: MOHITE, Vijay** [IN/IN]; 204, A wing, Sid-dhivinayak Tower, Near Fish Market, Behind, Badlapur Railway Station, Badlapur East, Mumbai 421503 (IN).
- (72) **Inventors: PAL, Shailesh Kumar**; Nishigandh, House No. 29, Sainath Nagar, At -Ukrul, Post - Chinchawali, Tal Karjat, District, Raigadh, Maharashtra, Raigadh 410201 (IN). **PAL, Shailendra Kumar**; Nishigandh, House No. 29, Sainath Nagar, At -Ukrul, Post - Chinchawali, Tal Karjat, District, Raigadh, Maharashtra, Raigadh 410201 (IN).
- (74) **Agent: AMBASTHA, Lalit et al.;** Patentwire, A-199, Ground Floor, Defence Colony, New Delhi 110024 (IN).
- (81) **Designated States** (*unless otherwise indicated, for every kind of national protection available*): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DJ, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IR, IS, JO, JP, KE, KG, KH, KN, KP, KR, KW, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.
- (84) **Designated States** (*unless otherwise indicated, for every kind of regional protection available*): ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, ST, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG).

(54) **Title: SMART PRESSURE COOKER**

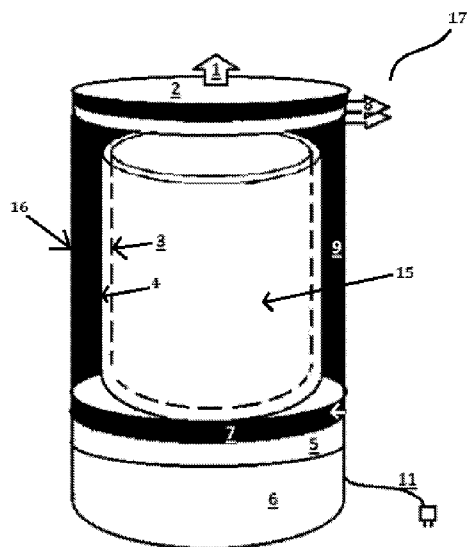


Fig. 1

(57) **Abstract:** The present invention provides a smart pressure cooker (17) which uses heat insulation technique and a novel construction to keep the cooked food warm for long hours and automatically starts heating the food after a preset duration or optionally a threshold temperature. The present invention provides a cost effective and time and energy saving smart pressure cooker (17) with a removable double walled internal container (15) with a heat transferring and storing material filled between the wall (3) and (4) of the double walled internal container (15), placed inside an external container (16) lined with a heat insulating material from inside. Also, a heating element (10) attached to a timer enables automatic power and temperature regulation to the smart pressure cooker (17).



Declarations under Rule 4.17:

- *as to the identity of the inventor (Rule 4.17(i))*
- *as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))*
- *as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))*
- *of inventorship (Rule 4.17(iv))*

Published:

- *with international search report (Art. 21(3))*
- *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))*

“SMART PRESSURE COOKER”

FIELD OF THE INVENTION

5 The present invention relates to a novel cookware appliance. More particularly, it relates to pressure cooker which uses heat insulation technique and a novel construction to keep the cooked food warm for long hours and automatically starts heating the food when the food temperature reaches below a preferred threshold limit.

10 BACKGROUND OF THE INVENTION

A pressure cooker is a sealed vessel in which pressure is created by boiling liquids to create steam, such as water, broth, etc and further trapping the steam to increase the internal pressure. The major function of a pressure cooker is to provide safe steam based cooking wherein both steam and pressure augment in faster cooking than just boiling.

15 The pressure cookers are quite safe as they were made safer by using rather rudimentary but effective techniques to control the pressure such as weight bearing. This has made pressure cookers household and professional cooking equipment that facilitates rapid and safe cooking. The journey of a pressure cooker has been very interesting and their evolution has evolved majorly on making them safe by incorporating advanced yet

20 uncomplicated steam release mechanisms. Hence pressure cookers are classified according to their steam release mechanisms in generations, starting from first generation pressure cookers which work by technique of weight bearing valve which regulates the pressure of the apparatus further succeeded by second generation pressure cookers which have substituted the old valves with spring loaded ones. However, there

25 was change in focus when it came to third generation cookers which focused more in digitally controlling the system by incorporating the pressure cookers with digital controls for controlling the steam pressure and adapting the pressure cookers to utilize induction based pressure cookers, electric cookers, slow cookers etc.

US 6,565,903 B2 discloses an automatic high energy saving cooker. The invention is a

30 dual-voltage, energy saving, electric pressure cooker designed with a thermally insulated

cooking pot, spaced-apart support members on the bottom of the pot to prevent food from sticking to the bottom, a unique, hinged, sauce-pan style handle for sealing and unsealing the pot using one hand, a built-in modem that supports the remote operation of manual or preprogrammed cooking controls by telephone or computer. The energy saving is accomplished in a two-mode pressure cooking process. Cooking mode one is active heating or steaming for a short but controlled period of time, as the liquid inside the pot reaches a temperature of approximately 120 °C (250 °F). Heating is then discontinued and foodstuffs are subsequently cooked to perfection in a second cooking mode wherein latent heat from the first cooking mode completes the cooking process without additional heat being added. The main drawback of this invention is that it is restricted to pressure cooking only due to its two mode pressure cooking process.

Therefore, although with advancement in technology the third generation pressure cookers such as electric cookers come with digital controls that help in monitoring and controlling the steam pressure but none of the pressure cookers have been designed to work in an amphibian mode i.e. particularly using induction and/or open flame and/or electric heating. Such cookers even give the added choice to a particular style of cooking time depending on the type of the dish to be prepared. Further, a pressure cooker has never really been customized to make it multi-purpose, such as adapting the pressure cooker to delay cool time of a prepared food item and thereby obviating the need of reheating whenever the food is to be eaten.

Therefore, there is a need of development of technology in pressure cookers to offer multiple features such as electronic or automatic control, prolonged heating and compatibility with different heat sources such as gas stove, induction plate etc. along with offering multiple modes of cooking such as pressure cooking, frying, roasting etc.

OBJECT OF THE INVENTION

The main object of the invention is to provide a pressure cooker with a detachable double walled inner cylinder or container incorporated into Bakelite housing wherein the sand is sandwiched between the housing and the Bakelite and the housing further comprises a reversibly attached heating coil.

Yet another object of the present invention is to provide a pressure cooker with an automatic power regulation system.

Yet another object of the present invention is to provide a pressure cooker with roasting facility.

Yet another object of the present invention is to provide a cost effective pressure cooker.

Yet another object of the present invention is to provide a pressure cooker which can
5 keep food warm for many hours.

Yet another object of the present invention is to provide a pressure cooker which can perform on electricity, gas & stove.

Yet another object of the present invention is to provide a pressure cooker with unique design that individual can run it while fan is on.

10 Still another object of the present invention is to provide a pressure cooker that helps to maintain nutrition of food.

SUMMARY OF THE INVENTION

Accordingly, the present invention relates to a pressure cooker which uses heat
15 insulation technique and a novel construction to keep the cooked food warm for long hours and automatically start heating the food when the food temperature reaches below a preferred threshold limit. The present invention provides a cost effective, time and energy saving smart pressure cooker with a removable double walled inner container placed inside an external container whose inside wall is lined with Bakelite. Sand is
20 sandwiched between the walls of the double walled internal container to transfer and store heat to provide warm food for a long time.

In an embodiment of the present invention, the smart pressure cooker comprises of a steam vent with pressure regulator assembled on an external container cover that works as a lid to the smart pressure cooker; an external container with inside bakelite wall; a
25 pair of handle out of which one handle is fixed to the external container and other handle is fixed to external container cover such that the handles align at one side for holding the pressure cooker; a removable double walled internal container preferably made up of stainless steel with a heat transferring and storage material preferably sand filled between the walls of the internal container; a teflon disk connected in the bottom of
30 the external container using nut and bolt, a teflon disk supporter assembled below the

teflon disk using nut and bolts; at least one removable base for holding a reversibly attachable heating material/coil wired with a plugin and attached to timer, roasting net base is optionally used to provide roasting feature in the smart cooker. A food item to be cooked is kept inside the removable double wall container and the heating element is turned on. The heating element heats the double wall container with sand stored inside its walls. When we switch off the heating element, food starts to cool down and the heat stored in sand transfers the stored heat to keep the food warm for long hours.

In another embodiment of the present invention, the smart pressure cooker is capable of roasting many things such as Papad, Bread etc. For roasting the smart pressure cooker is assembled such that the double wall cylinder is replaced with a roasting net base and the external container cover is kept open.

In another embodiment of the present invention, sand is utilized to keep the cooked food warm as sand exhibits a good heat absorption as well as storage of heat. When the smart pressure cooker is heated to cook food, sand filled between the walls of the double walled internal container stores this heat. After the application of heat is stopped, food starts to cool down and sand transfers its stored heat to food and thus food remains warm for long time.

BRIEF DESCRIPTION OF THE DRAWINGS

A complete understanding of the system and method of the present invention may be obtained by reference to the following drawings:

Figure 1 elucidates a perspective view of the smart pressure cooker assembly;

Figure 2 elucidates an exploded view of the smart pressure cooker assembly; and

Figure 3 elucidates an exploded view of the smart pressure cooker assembly for roasting purposes.

DETAILED DESCRIPTION OF THE INVENTION

The present invention now will be described hereinafter with reference to the accompanying drawings, in which some, but not all embodiments of the invention are

shown. Indeed, the invention may be embodied in many different forms and should not be construed as limited to the embodiments set forth herein; rather, these embodiments are provided so that this disclosure will satisfy applicable legal requirements. Like numbers refer to like elements throughout.

- 5 In a most preferred embodiment of the present invention a cost effective, time and energy saving smart pressure cooker (17) for multimodal cooking with automatic power and temperature regulation is provided. The present invention utilizes sand which a good heat transferring and storing material to keep the food heated for long hours. Said smart pressure cooker (17) comprises of:
- 10 a removable round base (6) with a heating element (10);
an external container (16) diametrically equal to the removable round base (6) is placed on the removable round base (6) acting as heat insulator;
a removable internal container (15) placed inside the external container (16) for
15 storing and cooking of food; and
an external container cover (2) with a steam vent (1) and a pressure regulator to regulate steam inside the smart pressure cooker (17) covering an external container (16) and internal container (15),
- 20 wherein;
- the external container (16) is having an inside wall (9) lined with a heat insulating material;
- the internal container (15) is double walled having an inside wall (3) and an outside
25 wall (4), dimensionally smaller than the external container (16) and with the inside wall (3) disposed within the outside wall (4) and a heat transferring and storage material filled between said inside wall (3) and said outside wall (4); and
an internal container cover (13) with an opening (14) to engage said steam vent (1)
30 for covering the internal container (15).

Here, the inside wall (9) of the external container (16) has a heat insulating material lining such as bakelite. The heating element (10) used is reversibly attachable and

connected to a wire with plugin (11) controlled via a timer. The timer is enabled to switch on and off the heating element (10) after a preset duration. The timer is enabled to switch on and off the heating material after a preset duration automatically to facilitate temperature regulation. A teflon disk (7) and a teflon disk supporter (5) are assembled
5 between the external container (16) and the removable round base (6) using nut and bolt. The heat transferring and storage material filled between said inside wall (3) and said outside wall (4) is sand. At least one handle (8) is fixed on external container cover (2) and external container (16) each to align at one side for holding the smart pressure cooker (17). The smart pressure cooker (17) facilitates multimodal cooking that includes
10 but not limited to pressure cooking, frying and roasting

In a preferred embodiment of the present invention for pressure cooking a food item in the smart pressure cooker (17), the food item to be cooked is kept inside the internal container (15) and is placed inside the external container (16) which is rested on the
15 removable round base (6) with heating element (10). The heating element (10) is turned on. The heating element (10) starts heating the teflon disk (7) assembled above the heating element (10). Now, the internal container (15) starts heating up. Sand filled between the walls (3) and (4) of the internal container (15) on one hand transfers the heat to the food placed inside the internal chamber (15) to get cooked and on the other hand
20 stores the heat. Heat is stored in the sand and when we switch off the heating element (10). After switching off the heating element (10), the sand starts transferring its stored heat to keep the food warm for long hours. The timer is preset with a duration after which the heating element (10) is again switched on automatically to keep the food warm. Optionally a temperature sensor is attached to internal container (15) and when
25 the temperature of internal container (15) reaches below a preset threshold temperature, the heating element (10) is again switched on for heating the food.

In an alternative embodiment of the present invention for roasting a food item using the smart pressure cooker (17), the internal container (15) is replaced with a roasting net base
30 (12) and the food item to be roasted is kept over it. The external container (16) is kept open while roasting.

In another alternative embodiment of the present invention for frying a food item using the smart pressure cooker (17), the internal container (15) as well as external container (16) is kept open and the internal container (15) is filled with oil for frying any food item.

5 **Figure 1** elucidates a perspective view of the smart pressure cooker (17). The smart pressure cooker (17) comprises of a removable round base (6) with a heating element (10) connected to a wire and plugin (11) attached to a timer. A teflon disk supporter (5) is assembled over the round base (6) attached to an approximately 0.5 cm thick teflon disk (7) using nut and bolt. Further, an external container (16) with inside bakelite wall is
10 attached to the teflon disk (7) using nut and bolt and the double wall internal container (3) of dimensionally less size than the external container (16) is placed inside the external container (16). An external container cover (2) with a steam vent (1), pressure regulator is used as a lid to the smart pressure cooker (17). One of the handle (8) from a pair of handle (8) is attached to the external container cover (2) and other handle is attached to
15 external container (16).

Figure 2 elucidates an exploded view of the smart pressure cooker (17) with a round base (6) at the bottom with a heating element (10) connected to a wire with plugin (11) is attached to a timer. An internal container (15) due to its double walled construction creates an insulated wall due to sand stored between the wall (3) and (4) of the internal
20 container (15) and an internal container cover (13) over it. The internal container cover (13) comprises an opening (14) in centre to engage the steam vent (1) of the external container cover (2). The external container cover (2) with a steam vent (1) and one of handle (8) out of the pair of handle (8) assembled to it is also provided that works as a lid to the smart pressure cooker (17).

25 **Figure 3** elucidates an exploded view of the smart pressure cooker (17) when used for roasting. The external container (16) with inside bakelite wall and one of the handle (8) from the pair of handle (8) is attached to the teflon disk (7) and teflon disk supporter (5) using nut and bolt. The double walled internal container (15) is removed and a roasting net base (12) is placed on the teflon disk (7) inside the external container (16) to enable
30 roasting in the smart pressure cooker (17).

Therefore, the technological advancement of proposed invention provides a cost effective and automatic on-off smart pressure cooker (17) that keeps the cooked food warm for

long hours after the food is cooked. Afterwards through the automatic on off mechanism, the food is again heated up as it starts to cool down. Further, the smart pressure cooker (17) is capable of roasting and eliminates the need of purchasing a roasting appliance. Furthermore, the proposed smart pressure cooker (17) is capable of

5 working on any of the cooking means such as stove, gas or electricity.

CLAIMS

I claim:

1. A smart pressure cooker (17) for multimodal cooking with automatic power and temperature regulation comprising of:
 - 5 a) a removable round base (6) with a heating element (10);
 - b) an external container (16) diametrically equal to the removable round base (6) is placed on the removable round base (6) acting as heat insulator;
 - c) a removable internal container (15) placed inside the external container (16) for storing and cooking of food; and
 - 10 d) an external container cover (2) with a steam vent (1) and a pressure regulator to regulate steam inside the smart pressure cooker (17) covering an external container (16) and internal container (15);wherein;
the external container (16) is having an inside wall (9) lined with a heat
15 insulating material;
the internal container (15) is double walled having an inside wall (3) and an outside wall (4), dimensionally smaller than the external container (16) with the inside wall (3) disposed within the outside wall (4) and a heat transferring and storage material filled between said inside wall (3) and said outside wall
20 (4); and
an internal container cover (13) with an opening (14) to engage said steam vent (1) for covering the internal container (15).
2. The smart pressure cooker (17) as claimed in claim 1, wherein the inside wall (9) of the external container (16) has a heat insulating material such as bakelite.
- 25 3. The smart pressure cooker (17) as claimed in claim 1, wherein the heating element (10) is reversibly attachable and connected to a wire with plugin (11) controlled via a timer.
- 30 4. The smart pressure cooker (17) as claimed in claim 3, wherein the timer is enabled to switch on and off the heating element (10) after a preset duration automatically to facilitate temperature regulation.

5. The smart pressure cooker (17) as claimed in claim 1, wherein a teflon disk (7) and a teflon disk supporter (5) are assembled between the external container (16) and the removable round base (6) using nut and bolt.
- 5 6. The smart pressure cooker (17) as claimed in claim 1, wherein the heat transferring and storage material filled between said inside wall (3) and said outside wall (4) is sand.
- 10 7. The smart pressure cooker (17) as claimed in claim 1, wherein multimodal cooking includes but not limited to pressure cooking, frying and roasting.
8. The smart pressure cooker (17) as claimed in claim 1, wherein optionally a roasting net base (12) can be attached for roasting.
- 15 9. The smart pressure cooker (17) as claimed in claim 1, wherein at least one handle (8) is fixed on external container cover (2) and external container (16) to align at one side for holding the smart pressure cooker (17).

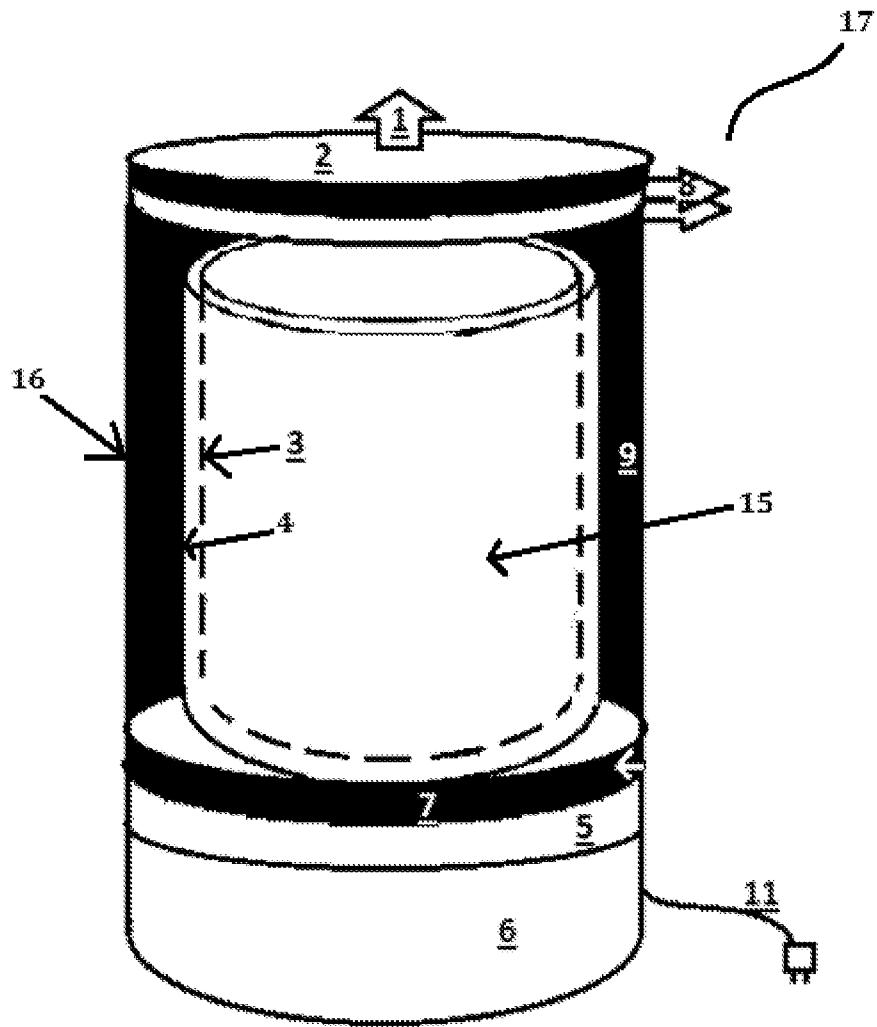


Fig. 1

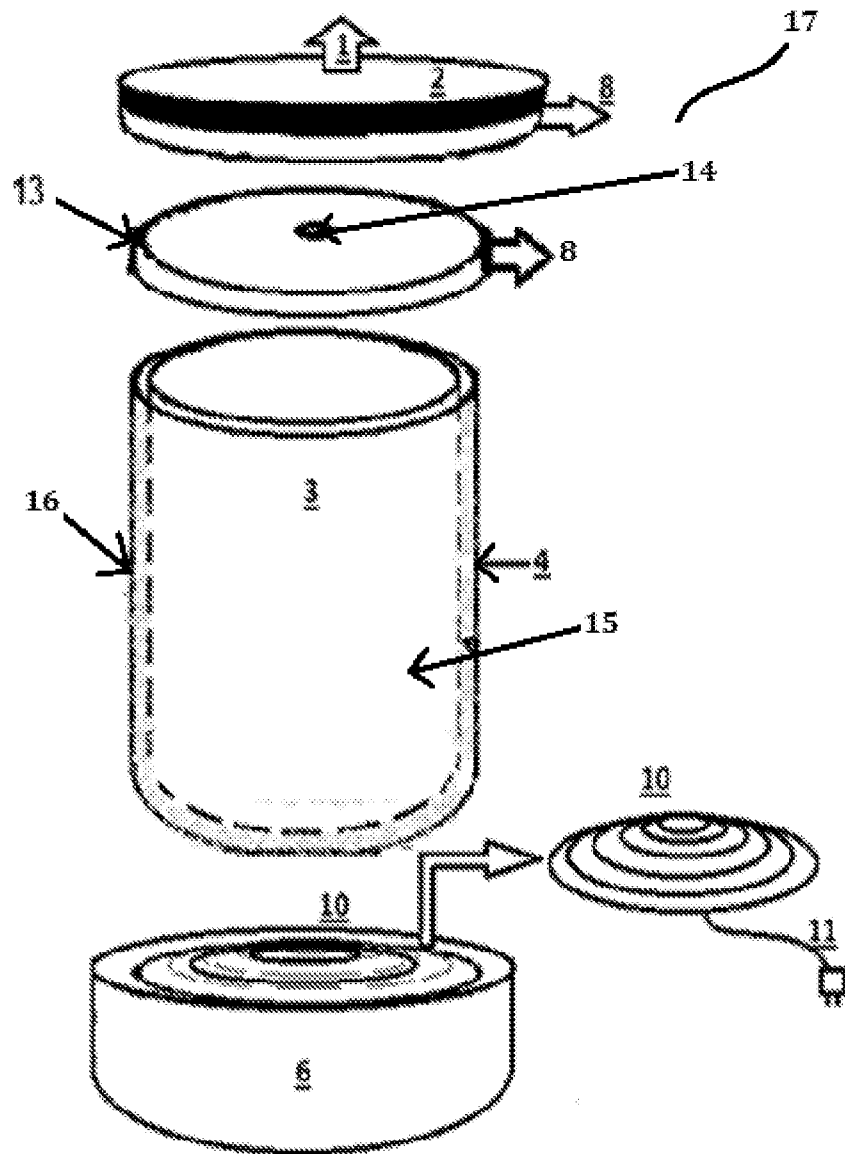


Fig. 2

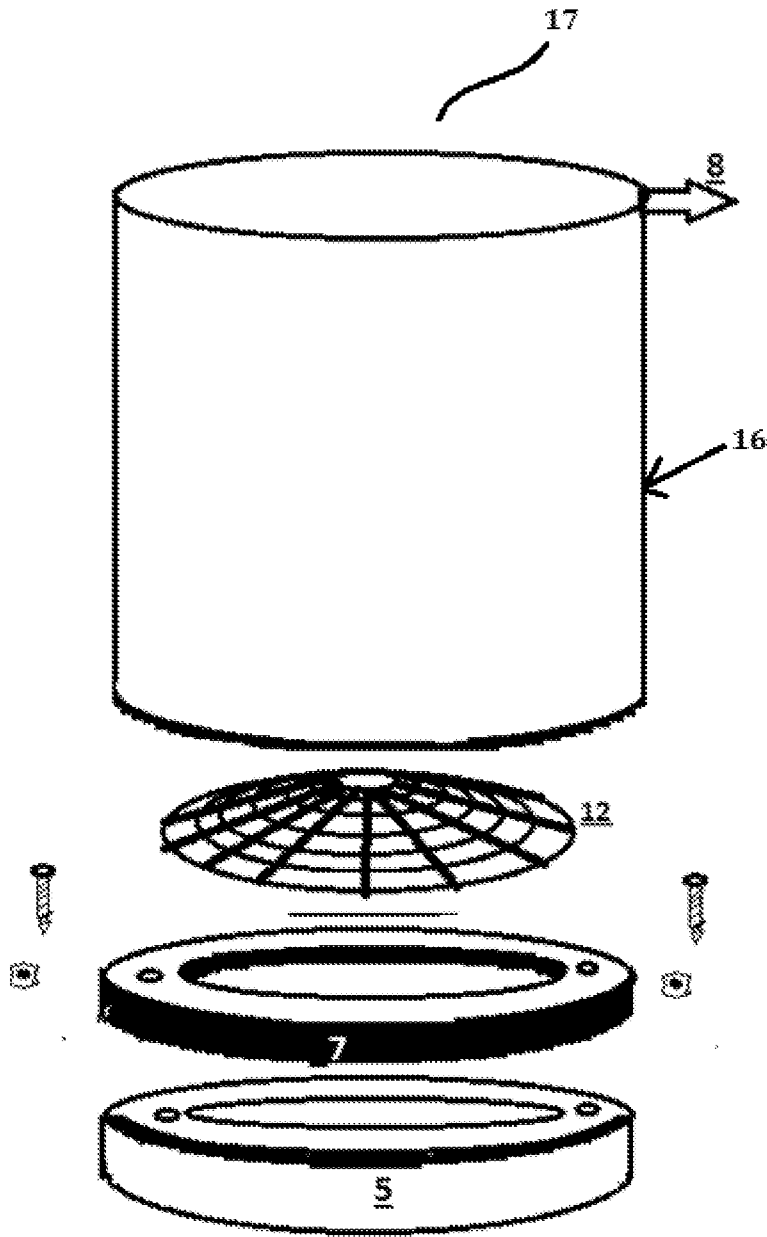


Fig. 3

INTERNATIONAL SEARCH REPORT

International application No.
PCT/IB2018/055811

A. CLASSIFICATION OF SUBJECT MATTER
A47J27/086 Version=2018.01

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)

TotalPatent One, IPO Internal Database

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US20170181564A1 (Zhigang He et. al.) 29 June 2017 (29-06-2017) Paragraphs [0020], [0023]; Figures 1, 2	1-9
Y	US20060151463A1 (JIAN GUANG) 13 July 2006 (13-07-2006) Paragraph [0024] - [0026], Figure 1	1-9
Y	US20060112834A1 (IMURA MAMORU) 01 June 2006 (01-06-2006) Paragraphs [0006]; Figure 1	1-9

Further documents are listed in the continuation of Box C. See patent family annex.

* Special categories of cited documents:	"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
"A" document defining the general state of the art which is not considered to be of particular relevance	"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"E" earlier application or patent but published on or after the international filing date	"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"&" document member of the same patent family
"O" document referring to an oral disclosure, use, exhibition or other means	
"P" document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search 24-12-2018	Date of mailing of the international search report 24-12-2018
---	--

Name and mailing address of the ISA/ Indian Patent Office Plot No.32, Sector 14, Dwarka, New Delhi-110075 Facsimile No.	Authorized officer Ashwin Sharma Telephone No. +91-1125300200
--	---

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/IB2018/055811

Citation	Pub.Date	Family	Pub.Date
US 20170181564 A1	29-06-2017	CN 205458000 U	17-08-2016
US 20060151463 A1	13-07-2006	AU 2003296224 A1	22-07-2004
		CA 2512278 A1	15-07-2004
		CN 1513408 A	21-07-2004
		JP 3138628 U	07-01-2008
		JP 2006512182 A	13-04-2006
		KR 20050096927 A	06-10-2005
		WO 2004058018 A1	15-07-2004
US 20060112834 A1	01-06-2006	JP 2008518727 A	05-06-2008
		WO 2006050527 A2	11-05-2006