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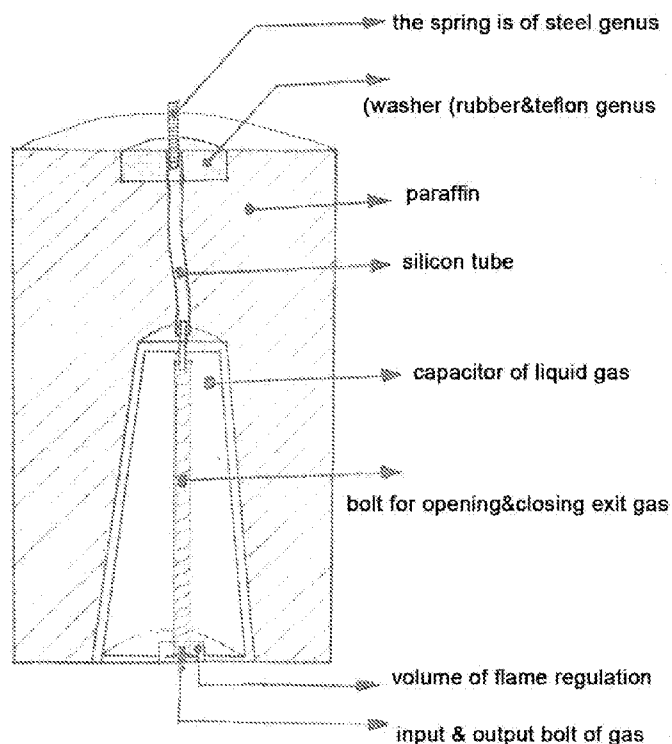
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[Continued on next page]

(54) Title: ORNAMENTAL LPG GASEOUS CANDLE WITH THE CAPABILITY OF RECHARGING



(57) Abstract: The ornamental gas- burning candle with recharging capability of the Paraffin with the system that create candle flame using burn of LPG Liquid gas that can create light & flame hours without paraffin burning & with the candle, a volume that is located at the end of it turn up & down the light result from LPG gas burning & provide a light matching with environment. Also if the gas inside the capacitor is finished It is charged easily in less than several seconds with the capsule contained gas & turn on & use the candle until unlimited time like this, The candle flame is real like candle flame & the spring t the paraffin remains like a candle lint.



Declarations under Rule 4.17:

— *as to the identity of the inventor (Rule 4.17(i))*

Published:

— *with international search report (Art. 21(3))*

Innovation topic; ornamental LPG gaseous candle with the capability of recharging

Technical ground of innovation: the ground of crafts of ornamental & light section

Innovator: Mehdi Balbasi

The innovation description

Technical problem & goals:

From ancient times , the candle would be used for lighting their surrounding environment in darkness & night. Nowadays , the candle is used for lighting in environments where there is not electricity & other lighting energies & is turned on an a romantic ornamental light in coffee shops & restaurants. In general, all present candles are produced from a lint of cotton genus & some paraffin with chemical formula of $C_n H_{2n+2}$ that is regarded as it's fuel materials.

Having turned on the candle , the candle paraffin is melted because of lint temperature & produce light that is finished after melting & evaporating all paraffin's & the cotton complete burning.

The researches have indicated that burning the candle cotton & paraffin, has dangerous harms like:

1. As a result of paraffin burning, monoxide carbon, dioxide carbon & Nitrogen oxide gases are produced that is very dangerous & poisonous for human.
2. As a result of burning the lint cotton in the environment space, smoke & particles are produced that is very dangerous & harmful for lungs.

Through burning paraffin wax that is the most common & cheapest wax rub on the candle, the wax produce cancerous & poisonous materials as a result of burning that from distributing the chemical materials & the smoke result of candle burning in the air that is not vacuumed in people afflicted to asthma may stimulate respiratory system or cause allergy that is risky for the person. Also , the smoke contains aromatic hydrocarbons that it's can cereous risks is known.

4. But one of the other compounds that are entered environment with the candle burning is lead that is combined with the air oxygen & precipitate in

the lung & enter blood current from there & affect more body elements & biochemical processes.

Also the researches has indicated that the durability, rate of lead result from paraffin burning in room temperature is one hour that is remained in the air & after a while is precipitated. & sit on the house furniture along with dust , in such case , the possibility of childs pollution through hands & mouth.

1. Finally wit quiet burning of candle , the melted & remained paraffins through trash enter biology & the researches has indicated that the remained paraffines in the nature is not analyzed & is very harmful for biology.
2. The present candles have light limitation & are melted & turned off with a limit burning time.

In this regard , gaseous ornamental candle with LPG fuel has solved the problem.

The situation of precedent knowledge.

In candles production, two key elements of lint & paraffin have been always the main issues in candle production & in order to the candle is on more , would try 10 use better of different lint's.

It's appearance can also decrease chemical elements to paraffin from it's quick melting. & because the candle would contaminate the environment after one hour burning, should have been turned off & change the environment air & the paraffin related to the candle is melted & out because of the lint burning & until now , candles is built with the light of LED small lamps that are quietly synthetic & have not the beauty of candle natural light.

Proposing solution along with the accurate description of the innovation:

In general , the failures present in candles with burning of paraffin & lint is as the following, the failures like:

3. The limitation of candle burning time .
4. Burning the present paraffin& producing dangerous & cancerous gases result from paraffin burning .
5. High costs for buying the substitute candle .
6. The biologic risks from the remained spoilages for burning in biology that could solve those failures as the following with innovative building of ornamental gaseous candle with LPG liquid fuel.

1. The candle have the following parts:

The input & output bolt of gas in the candle end that enter capacitor from the LPG liquid gas entrance.

2. LPG liquid gas: the liquid gas that is called liquid gas petroleum in industry & is constituted with chemical formula of C_3H_8 & C_4H_{10} . From biologic view, using LPG gas in standard form possess the least life cycle of greenhouse gasses distribution in comparison to paraffin fuel & other fuels. In general , the liquid gas , 50% in proportion to ozone layer thinning , 3.1 % distribution of unburnt hydrocarbons , 20 % nitrogen oxides & 60% monoxide carbon in comparison to paraffin & other gases have the least harm.

& finally the liquid gas after burning it's 90% , is converted to other energy & it's remaining is destroyed impurely & also Aldehyd distribution result from LPG PAH combustion is very negligible in proportion to paraffin burn.

3. the volume of flame regulation: the volume that is in the candle end, is responsible for opening & closing exit gas & also the intensity of output gas & finally cause turning up & down the candle flame light.

4. the capacitor of liquid gas reservoir that is built from a compact plastic void with diameter of 38 mm & the height of 75 mm.

5. silicon tube from sillies genus with external diameter of 3 mm & internal diameter of 1.5 mm which is resistant against heat to the temperature of $270^{\circ}C$ that it's function in the system is as the gas mediator from capacitor to the flame head.

6. the washer is from rubber or teflon genus with external diameter of 2.5 cm & internal diameter of 3 mm & thickness of 7 mm that it's duty in the system is that absorb the heat result from light flame & end spring to itself & harness it to prevent melting the body paraffin.

7. the spring is of steel genus with internal diameter of 1.5 mm & external diameter of 1mm that have the duty of transferring the gas to the exit in the system & it's genus is designed such that would be quiet innovative against flame & the flame that is burned on it is close to the colour of paraffin candles flame. The flame is burnt in the spring tip & the necessary air for burning reaches to flame from the lower parts of the spring.

8. the paraffin that is regarded as the system body, it's diameter can be designed 38 mm & more & it's height 75 mm & more in the system.

Every desired form of the element function is such that after charging the system capacitor of LPG gas with chemical formula of C_3H_8 & C_4H_{10} that can be done easily with capsules contained LPG gas in the market & charge the capacitor of LPG gas through the candle ants bolts. Then we turn the candle end volume to the right.

That with turning the volume, the gas reaches from capacitor & through silicon connector tube to the candle head & is turned on with approaching a flame to that candle. After turning on the candle, the flame can be turned up & down with the same volume in order to create every desired light & the flame can produce flame several hours easily continuously without melting its body paraffin & after finishing the gas of liquid inside the capacitor, the flame is turned down & can be recharged at times by capsules contained LPG gas that is the market called fandak gas capsule & use it again & a candle can be preserved to every unlimited time & harm less to the biology & human.

Explaining forms, map & diagrams

Figure 1-include a cut view of the system

- 1-1- The spring is of steel genus with external diameter of 1/5 mm &
- 1-2- internal diameter of 3 mm & thickness of 7 mm that the washer is innovative also & has distributed the heat result from flame is reached to spring & desorbs it.
- 1-3- the body is from paraffin genus with chemical formula of $C_{n}H_{2n+2}$ that can be built in any form & size.
- 1-4- silicon tube with external diameter of 3 mm & internal diameter of 1/5 mm from silis genus that is responsible for transiting gas from capacitor to the spring head.
- 1-5- the capacitor of liquid gas reservoir : the capacitor that is in the form of a void canopy & diameter of 38 mm at the end & 20 mm diameter on the top & 75 mm height that is built from compact plastic genus & is designed for keeping liquid gas until unlimites time.
- 1-6- the bolt of gas output regulation: the bolt that is inside the capacitor , turn with turning the candle bottom volume & open the closed room of the capacitor bottom for exiting gas.
- 1-7- the volume of flame regulation: the volume that is located at the end of candle is responsible for opening & closing the gas out put & turning up & down the flame.

1-8- the input & out put bolt of liquid gas that is used in the system as an entrance for entering the gas again to the emptied capacitor.

The innovation benefits

1. prevent burning the candle paraffin & so the paraffin spoilages that is dangerous for biology is not produced.
2. Melting & evaporating paraffin is prevented & as a result, dangerous & cancerous gases result from paraffin burning is removed.
3. the candle has quietly economic aspect & it can be kept for ever with it's recharging.
4. Producing light by LPG gas does not create smoke (result from burning the cotton of paraffin candle lint)& does not crate sensivity & allergy .
5. The produced light by the candle is regulatable & every desired light can be created easily.
6. Because of high trend of light creation by burning LPG gas in the candle , the candle can be used in without ventilation environments.
7. An aid to removing the air pollution cycle & environment pollution with removing paraffin burning in environment.

application.

The candle can be used easily where by other energy carriers, the environment can not be lighted & create light & can be replaced by paraffinandle in many houses & clubs & coffee shops & restaurants for ornamenting the table in order to decrease the environment pollution.

An administrative method for applying innovation

- for turning on the candle , it is enough to take out the candle bottom volume & turn it to the right & a flame is created with firing in the spring head & the result flame can be turned up with turning volume to the right & turned down with turning it to the left , turned off with it's quiet turning to the left.

When the gas inside the capacitor is finished it can be recharged with an LPG gas capsule that is found in the market through candle end & the part of input bolt.

Claim letter

1. Industrial & ornamental candle with burning LPG liquid gas with chemical formula of C_4H_{10} & C_3H_8 with controllable flame by regulation volume is burned limitlessly with the capability of recharging, deleting paraffin melting with liquid gas keeping capacitor in limitless form of keeping time.

2. According to the claim 1: there is a volume at the candle end , that with turning it to the right, the gas reaches from capacitor to the spring head & create flame with firing on the spring & the flame & light rate, can be turn up & down with volume turning.

3. According to the claim 1: LPG gas burning related to the system have the ability of recharging by a gas input bolt that is located at the candle end.

4. The used spring is of steel alloy with external diameter of 1/5 mm & internal diameter of 1mm that is very resistant against heating & is the end route of the system gas exit that flame is created on it.

5. According to the claim 4: A silicon tube with external diameter of 3 mm & internal diameter of 1/5 mm , take the gas from capacitor to spring that the silicon tube is resistant to the temperature of 270°C & can tolerate the spring heat result from flame.

6- According to the claims 4 & 5, washer is of rubber fabric with external diameter of 2/5 cm & internal diameter of 3 mm & the thickness of 7mm that the spring & silicon tube are connected each other inside the washer. & the washer receives the heat result from the spring is reached to silicon tube & has distributed & harnessed it in itself in order the heat don't teach to the body that is paraffin genus.

Innovative elements

The used spring on the top of the candle is quiet Innovative that is built in external diameter of 1/5 mm. & internal diameter of 1 mm that raise liquid gas burning trend & create a light like real candle.

Rubber washer with the thickness of 7 mm & external diameter of 2/5 cm & internal diameter of 3 mm is quiet innovative that cause absorbing the heat result from flame it's desorption in order to pervert paraffin melting.

Description summary

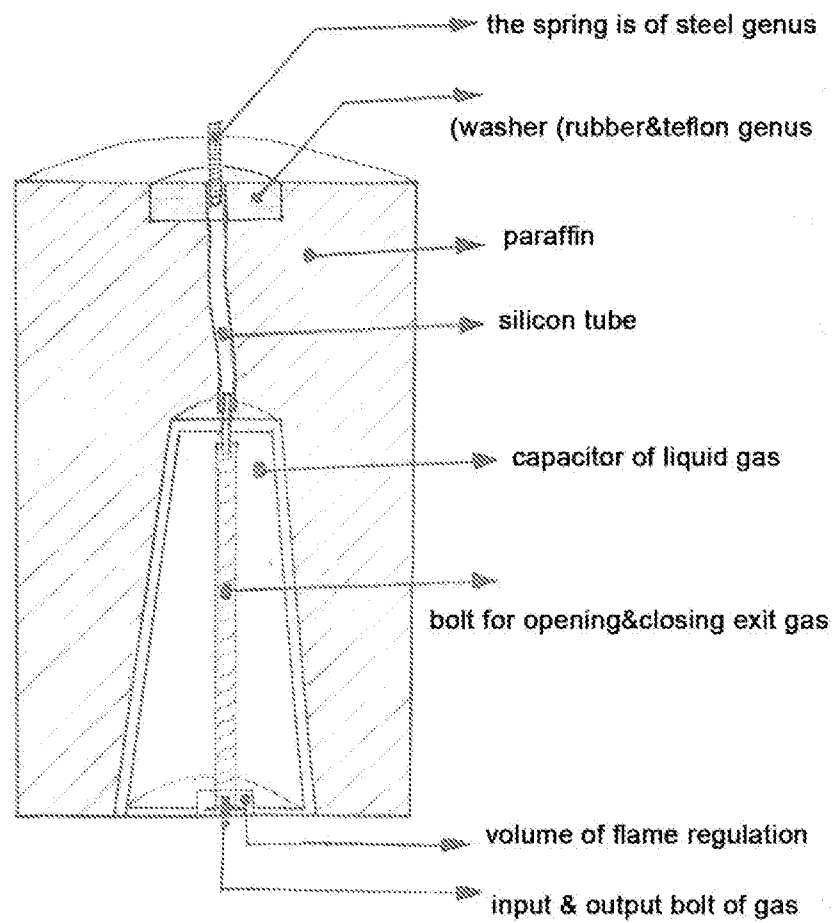
The ornamental gas- burning candle with recharging capability of the Paraffin with the system that create candle flame using burn of LPG Liquid gas that can create light & flame hours without paraffin burning & with the candle, a volume that is located at the end of it turn up & down the light result from LPG gas burning & provide a light matching with environment.

Also if the gas inside the capacitor is finished It is charged easily in less than several seconds with the capsule contained gas & turn on & use the candle until unlimited

time like this , The candle flame is real like candle flame & the spring t the paraffin remains like a candle lint.

Enclosures & maps & images.

Along with the explanations, a map8 &4 image s from upward view, up, down & cut view is enclosed.



ornamental LPG gaseous candle with the capability of recharging ;

INTERNATIONAL SEARCH REPORT

International application No.
PCT/IB2015/060079

A. CLASSIFICATION OF SUBJECT MATTER
C09K11/02 Version=2016.01

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)

C09K

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)

IPO INTERNAL DATABASE, PATSEER

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US20090220904 A1, 03 Sep 2009, LAMPLIGHT FARMS. INC. See abstract para 05-08, Para 24 and Fig 1 of D1.	1-6
Y	US6159002 A, 12 Dec 2000, LAMPLIGHT FARMS. INC. See abstract , fig 1-6 and claim 1 of D2.	1-6
Y	CA2377440 A1, 20 Sep 2002, UNITED INDUSTRIES CORPORATION. See abstract and para 008, claims 1-17 of D3.	1-6
Y	US 20060199129 A1, 07 Sep 2006, FOREMOST GROUP INC. See abstract, para 007, fig. 1-6 and claims 1-13 of D4.	1-6

☐ 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	

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INTERNATIONAL SEARCH REPORT
Information on patent family members

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Citation	Pub.Date	Family	Pub.Date
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CA 2377440 A1	20-09-2002	US 20020164554 A1	07-11-2002
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