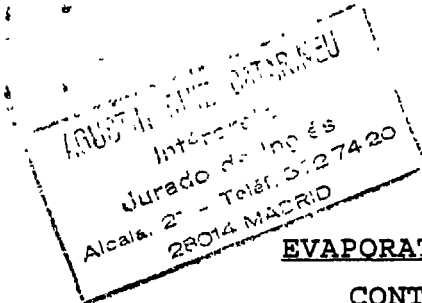




\*159159\*

EVAPORATOR FOR VOLATILE PRODUCTS WITH EVAPORATION RATE  
CONTROLLED BY MEANS OF AN INTERPOSED MOVING CAP

DESCRIPTION

5

OBJECT OF THE INVENTION

( The present invention relates to a device designed to evaporate volatile products for air fresheners, insecticides or similar substances, by heat provided by electrical resistors, in order to enhance the evaporation of the product which soaks a wick from the product container.

15 The invention centers on the means which the device incorporates in order to allow an adjustable intensity of evaporation.

BACKGROUND OF THE INVENTION

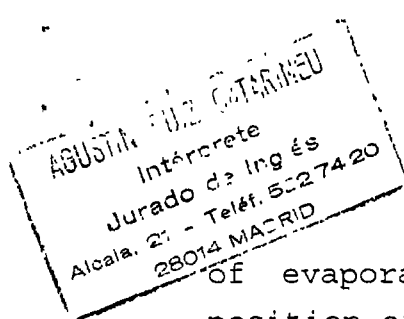
20

( Volatile substance evaporators are widely known in the market, generally applied to insecticides or perfumes, and having a vessel containing the product to be evaporated, which rises by capillarity through a wick which leads the product near heating resistors which by their heat cause the evaporation.

30 In order to adapt use of these devices to different utilization conditions or consumer preferences, the rate of evaporation of the substances may be controlled, thus releasing a larger or smaller amount of evaporated product to the surroundings.

35 In this sense Patent application no. 9701388 is known, in which one of these devices is disclosed where the rate





OF evaporation is controlled by changing the relative position of the wick and the heating element.

5 In this device, the electrical heating resistors are static, and it is the container and the wick which move axially by means of a threading in order to change the degree of exposure of the wick in the area of influence of the heating resistors.

10 These devices seek to combine simplicity and economy of production with efficiency and ease of use, as well as to make this use attractive to the consumer.

#### DESCRIPTION OF THE INVENTION

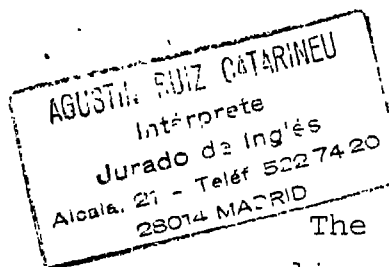
15

The invention here disclosed has been designed to provide an evaporator for volatile products with adjustable evaporation rate, in which the means which make the evaporation possible imply greater simplicity of construction and an easier and more pleasant operation of the device.

25 The adjustment of the rate of evaporation is achieved by a moving cap, which in addition to providing the evaporator with the aforementioned characteristics, allows a more efficient regulation of the evaporation of the volatile product than in previously known systems.

30 In this way the volatile product evaporator is made from the basic structure for these devices, with a case or body which houses the heating resistors and externally forming a plug for connection to the electrical mains, for power supply to the heating resistances. As a rule these resistors are of the PTC type.

35



The lower end of the case is provided with means of coupling the vessel containing the volatile product, either by screwing on or by any other conventional technique, so that it may be replaced by a new vessel when the content is exhausted.

Inside the vessel is a cylindrical wick which absorbs the liquid by porosity so that it rises up through it until it is near the heating resistors.

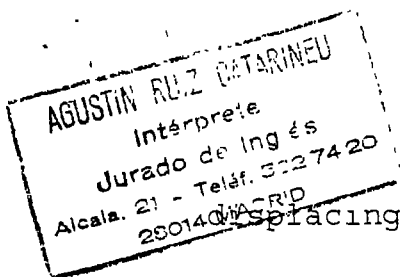
10

Based on this known arrangement of these devices, the invention is centered in that in order to determine the rate of evaporation, the evaporator is provided with a cap which can be manually axially moved, inside which is housed the wick soaked with the volatile product.

The function of the cap is to create a chimney effect which affects the rise of the vapor generated in the wick, so that this chimney effect increases the rising speed of this vapor, thereby increasing the rate of evaporation.

The axial displacement of this cap determines different heights for it, partially completing the path of the vapor to the outlet orifice. The longer this path the greater the chimney effect in the evaporation and vice versa, with a maximum and minimum position being defined by limiting the cap displacement with stops placed inside the case in a suitable manner.

The cap is connected to an arm which ends in a guide, meant to project out from the case through an inclined groove which defines the displacement of this guide. The user will operate this guide manually, which has a shape adapted to the inclined groove so that it may slide in it in either direction, upwards or downwards, thereby axially



replacing the cap and adjusting the rate of evaporation.

#### DESCRIPTION OF THE DRAWINGS

5 Further advantages and characteristics of this invention will become apparent from the accompanying drawings, attached to the present descriptive memory as an integral part and where for purposes of illustration only and in a non-limiting way the following is shown:

10

( Figure 1 shows a sectional profile view of the evaporator device with an intermediate position of the movable cap.

15 Figure 2 is a perspective view of the piece which makes up the movable cap.

Figure 3 shows a front elevation of the elements which are part of the invention with the product container vessel  
20 coupled and with the cap in its maximum position.

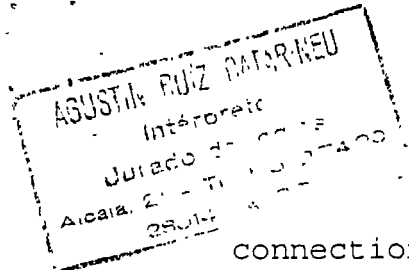
Figure 4 is a similar view to the previous one seen from a side.

( 25 Figure 5 is a perspective view of the elements which are part of the invention without the container and the wick with the cap in its minimum position.

#### PREFERRED EMBODIMENT OF THE INVENTION

30

Figure 1 shows the elements which together make up the evaporator device, which is based on case (1) which forms a plug (3) for connection to the electrical mains. Within case (1) is housed and anchored heater (5), with PTC type  
35 resistors acting as heat generating elements upon



connection to the electrical power supply through plug (3).

The lower end of case (1) has an opening for coupling of vessel (2), which contains the volatile product, which rises through wick (4), which in turn passes through an orifice made for this purpose in heater (5) in order to expose the volatile product to the heat generated there.

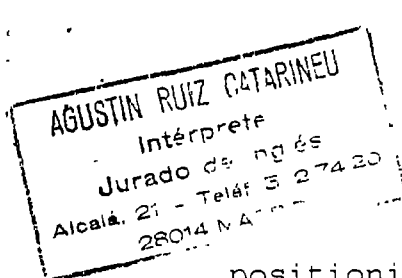
The vapor produced in this way rises and flows to the outside through orifice (8).

The invention is centered on the inclusion of the regulating element (6) which consists of the movable cap (9) which is placed between wick (4) housed inside it and heater (5) as seen in this figure 1, so that it can move axially between the two elements.

The axial displacement is transmitted to the movable cap (9) by arm (12), which is connected to its upper part and which connects it to guide (13) which has its upper and lower extremes inclined and parallel.

In addition, on the front side wall of case (1) is provided an inclined track (10), closed internally by internal wall (17) which forms a window in case (1), as well as forming lower ramp (7) and upper ramp (14). This inclined track (10) houses guide (13) and is shaped to adapt to it, with the inclination of its edges matching that of ramps (7) and (14) on which they will slide, guide (13) being the component on which the user acts in order to regulate the rate of evaporation.

The motion of guide (13) is limited by the internal size of inclined track (10), so that the regulation element (6) is correctly placed at all times, which correct



positioning is also aided by the position of movable cap (9) within the cylindrical orifice of the heater (5).

5 In this way the lateral displacement of guide (13) in either direction and due to its inclination and that of the inclined track (10) has the effect of raising or lowering the regulator element (6) and therefore causing the axial displacement of movable cap (9).

10 The presence of this movable cap (9) causes a chimney effect in the vapor which is generated, since it creates an upwards channel for the vapor which stops it from spreading to the sides and creating a riding vapor current. As this vapor does not spread to the sides and is channeled it  
15 empties the inside of case (1) through orifice (8) more quickly, generating an upwards suction of the air in movable cap (9) which accelerates evaporation.

The different vertical positions for movable cap (9)  
20 allow it to create a chimney effect in the entire path of the vapor until it leaves orifice (8) thus establishing a maximum evaporation rate, or to partially complete this path, allowing the vapor to diffuse partially in nearby areas to a greater or lesser degree, thus managing to  
( 25 regulate the rate of evaporation.

In this preferred embodiment the position of guide (13) which defines the degree of evaporation is the one shown in figures 3 and 4, when it is in the extreme right  
30 hand position within inclined track (10), making the movable cap (9) complete the entire path of the vapor.

On the top the regulating element (6) forms battlements (11) which are used as stops for its vertical  
35 motion when they hit case (1), as seen in figures 3 and 4.

In this maximum position annular wall (16) formed by case (1) is coupled inside battlements (11) to create an extension of the movable cap (9).

5        The position which results in a minimum rate of evaporation is the one shown in figure 5, with guide (13) in the leftmost position in inclined track (10), displacement in this direction also being limited by contact with arm (12) on heater (5). In this position as  
10 seen in this same figure, the vapor is allowed to spread to the sides, so that the chimney effect is minimal and therefore so is the evaporation, which in this point will be determined by the relative position between wick (4) and heater (5), as well as by their construction.

15

In addition, in the lowermost position of movable cap (9) it is interposed in the heat transmission between heater (5) and wick (4), thus reducing further the minimum rate of evaporation distancing it from the maximum value.

20 In this way a greater regulation capacity is provided.

So that the user can identify several positions of guide (13), which is to say, rates of evaporation, the invention shall provide a graded scale (15) on the front  
( 25 side wall where inclined track (10) is located, which can consist of any type of marks which determine these positions.

In this preferred embodiment, regulating element (6)  
30 is made in plastic, although depending on the application of the evaporating device it can be made in any other material, since it may be interesting for the regulator element (6) to participate in heat transmission between heater (5) and wick (4).

35

AGUSTIN RUIZ CATARINEU  
Intérprete  
Jurado de lng és  
Alcala 21 - Teléf. 3127423  
28014 MADRID

Since the main characteristic of the invention consists of the use of this chimney effect to regulate the extent of evaporation, the invention foresees as an option, that the system with which the axial displacement of  
5 movable cap (9) is achieved can be any other which provides the same effect, whether by screwing or any other, with the intervention of different means.

CLAIMS

1.- Evaporator for volatile products with evaporation rate controlled by means of an interposed moving cap, applicable to the evaporation of insecticides, perfumes or similar, consisting of a case (1) which forms plug (3) for electrical power supply, and having a replaceable container (2) for the volatile product, which rises through wick (4) to reach the area of influence of a heater (5), characterised in that regulation of the degree of evaporation is performed by a movable cap (9), which can be moved axially between wick (4) inside it and the orifice of heater (5), so that the presence of cap (9) defines a conduct for the vapour generated to rise, causing a chimney effect which favours evaporation as it accelerates the upwards flow of the vapour, regulation being obtained by the different positions of movable cap (9), so that the rising path of the vapour is completed to a lesser or greater degree until it leaves through orifice (8), while simultaneously a more efficient evaporation is obtained, and in that the interposition of movable cap (9) between wick (4) and heater (5) distances the extremes of evaporation, to allow a greater capacity of regulation.

2.- Evaporator for volatile products with evaporation rate controlled by means of an interposed moving cap, as in claim 1, characterised in that movable cap (9) is connected to the upper end of arm (12) which in turn is connected in the other end to guide (13), which has inclined upper and lower edges, all of these elements defining the regulating element (6), and in that the front side wall of case (1) is formed inclined track (10) closed by inner wall (17) and making ramps (14) and (17), both inclined so that since guide (13) is meant to house inclined track (10) the displacement of its edges on ramps (14) and (17) causes it

to rise or fall and therefore through arm (12) the positioning of movable cap (9) and the regulation of the rate of evaporation.

5           3.- Evaporator for volatile products with evaporation rate controlled by means of an interposed moving cap, as in claim 1, characterised in that the axial displacement of cap (9), as an option, is performed by any technique or procedure or system deemed adequate and which has the same  
10 function of displacing movable cap (9) axially to create the chimney effect by which the evaporation is controlled.

(           4.- Evaporator for volatile products with evaporation rate controlled by means of an interposed moving cap, as in  
15 claims 1 and 2, characterised in that in a visible place of case (1) a graded scale (15) is placed which identifies several positions for guide (13) and therefore several evaporation rates.

20           5.- Evaporator for volatile products with evaporation rate controlled by means of an interposed moving cap, as in previous claims, characterised in that in the uppermost position of the regulating element (6) is determined by contact of battlements (11), which are provided in the  
( 25 upper area, with the inside of case (1), the former also being meant to house between them annular wall (16) formed by case (1), which in this position is an projection of movable cap (9), and in that the lowermost position of regulator element (6) is determined by contact between arm  
30 (12) and heater (5), both positions also being defined by the end positions of guide (13) within inclined track (10).

          6.- Evaporator for volatile products with evaporation rate controlled by means of an interposed moving cap, as in  
35 previous claims, characterised in that regulator element

AGUSTIN RUIZ CATARINEDU  
Intéprete  
Jurado de Inglés  
Alcalá, 21 - Telef. 5-27420  
28014 MADRID

(6) is preferably made of plastic, although depending on the applications of the evaporator this component can be made of any other material.

AGUSTIN RUIZ CATARINEU  
Intérprete  
Jurado de Ing'és  
Alcala. 21 - Teléf. 5227420  
28014 MADRID

12

EVAPORATOR FOR VOLATILE PRODUCTS WITH EVAPORATION RATE  
CONTROLLED BY MEANS OF AN INTERPOSED MOVING CAP

ABSTRACT

5

A device is disclosed meant to perform evaporation of insecticides, perfumes or the like, wherein the degree of evaporation is controlled by a moving cap (9) which makes up the regulating element (6), which is meant to produce a chimney effect in the upwards motion of the generated vapor, so that this effect enhances evaporation, while regulation is achieved by the different heights at which moving cap (9) can be placed. This displacement is performed manually by moving guide (13) inside inclined track (10).

10

15

- 1 -

**DISPOSITIVO EVAPORADOR DE PRODUCTOS VOLATILES CON  
INTENSIDAD DE EVAPORACION VARIABLE, MEDIANTE LA  
INTERPOSICION DE UN CASQUILLO MOVIL.**

5

**D E S C R I P C I O N**

**OBJETO DE LA INVENCION**

( 10 La presente invención se refiere a un dispositivo de los destinados a realizar la evaporización de productos volátiles ambientadores, insecticidas o sustancias similares, mediante la aportación de calor a través de unas resistencias calefactoras, para potenciar la evaporación del producto que impregna una mecha desde 15 el envase contenedor del producto.

La invención se centra en los medios que incorpora el dispositivo para permitir que la intensidad de la evaporación sea regulable.

20

**ANTECEDENTES DE LA INVENCION**

( Son ampliamente conocidos en el mercado evaporadores de sustancias volátiles, generalmente de 25 aplicación como elementos insecticidas o perfumadores, que disponen de un recipiente contenedor del producto a evaporar, el cual asciende por capilaridad por una mecha que conduce el producto hasta las proximidades de unas resistencias calefactoras que por efecto del calor, 30 determinan su evaporación.

Para adaptar el uso de estos dispositivos a diferentes circunstancias de utilización o gustos de los usuarios, el ritmo de evaporación de las sustancias 35 volátiles es regulable, suministrando al ambiente mayor

- 3 -

De este modo el dispositivo evaporador de productos volátiles, se constituye a partir de la estructuración básica de estos elementos, disponiendo de una carcasa o cuerpo que aloja en su interior a las resistencias calefactores y que forma externamente un enchufe para su conexión a la red de suministro eléctrico, de la que se abastece para el, calentamiento de las resistencias. Por regla general, estas resistencias son del tipo PTC.

10

Esta carcasa en su zona inferior, dispone de medios para el acoplamiento del envase contenedor del producto volátil, ya sea por roscado o cualquier otra técnica convencional, de manera que permita ser sustituido por un nuevo envase cuando se agota su contenido.

En el interior del envase se aloja una mecha cilíndrica, que por porosidad absorbe el líquido para que este ascienda por ella hasta la proximidades de las resistencias calefactoras.

Partiendo de esta disposición conocida de estos dispositivos, la invención se centra en que para determinar el grado de evaporación, el evaporador dispone de un casquillo desplazable axialmente por acción manual, en el interior del cual se aloja la mecha empapada con el producto volátil.

La función del casquillo es la de crear un efecto chimenea, que afecte a la ascensión del vapor generado a partir de la mecha, de forma que este efecto chimenea acentúe la velocidad de ascensión de este vapor, incrementándose en consecuencia el ritmo de evaporación.

35

- 5 -

desplazable.

5       - La figura 3, muestra una vista en alzado frontal de los elementos que intervienen en la invención, con el envase contenedor del producto acoplado, y cuando el casquillo está en una posición máxima.

10       - La figura 4, es una representación similar a la anterior, pero vista desde un lateral.

15       - La figura 5, es una representación en perspectiva de los elementos que intervienen en la invención, sin el envase y mecha, y cuando el casquillo está en su posición mínima.

#### 15       **REALIZACIÓN PREFERENTE DE LA INVENCION**

20       En la figura 1 se aprecia todo el conjunto de elementos que forma el dispositivo evaporizador, que se constituye a partir de la carcasa (1) que forma el enchufe (3) para su conexión a la red eléctrica. Dentro de la carcasa (1) se aloja y se fija el calefactor (5), el cual dispone de resistencias PTC., como elementos generadores de calor al ser alimentados con la corriente  
25       suministrada a través del enchufe (3).

30       Inferiormente la carcasa (1) dispone de una abertura para el acoplamiento del envase (2), donde se dispone del producto volátil que asciende por la mecha (4), la cual pasa dentro de un orificio existente al efecto en el calefactor (5), para exponer el producto volátil al calor allí generado.

35       El vapor de este modo producido, asciende fluyendo al ambiente exterior a través del orificio (8).

- 7 -

producir el desplazamiento axial del casquillo desplazable (9).

La presencia de este casquillo desplazable (9) produce un efecto chimenea en el vapor generado, ya que forma un canal conductor del vapor en sentido ascendente, que impide que este se disperse hacia los laterales, produciendo una corriente de vapor ascendente. Este vapor al no dispersarse por los laterales y al tener su desplazamiento conducido, evacua el interior de la carcasa (1) a través del orificio (8) con mayor rapidez, generándose una succión ascendente del aire comprendido en el casquillo desplazable (9) que acelera la evaporación.

Las diferentes posiciones verticales del casquillo desplazable (9), hacen que este produzca el efecto chimenea en todo el recorrido del vapor hasta que sale por el orificio (8) determinando así un ritmo de evaporación máximo, o completando parcialmente este recorrido permitiendo que el vapor se difumine en parte en las zonas adyacentes en mayor o menor medida, obteniéndose así la regulación del grado de evaporación.

En esta realización preferente de la invención, la posición de la guía (13) que establece el grado de evaporación, es la representada en las figuras 3 y 4, cuando ocupa la posición extrema derecha dentro del carril inclinado (10), haciendo que el casquillo desplazable (9) complete todo el recorrido del vapor.

Superiormente el elemento regulador (6) forma las almenas (11) que sirven de topes de su desplazamiento vertical al tocar estas en la carcasa (1), tal y como se observa en las figuras 3 y 4. En esta posición máxima, la pared anular (16) que forma la propia carcasa (1) se

- 9 -

con cualquier otro material, ya que puede interesar que el elemento regulador (6) participe en la transmisión de calor entre el calefactor (5) y la mecha (4),

5 Ya que la característica fundamental de la invención consiste en el uso de ese efecto chimenea para regular el grado de evaporación, la invención prevé que de manera opcional la técnica mediante la que se realiza el desplazamiento axial del casquillo desplazable (9),  
10 pueda ser cualquier otra con la que se logre el mismo efecto, ya sea por roscado o cualquier otra, o con la intervención de medios distintos.

15

20

- 11 -

extremo con la guía (13) que dispone de sus bordes superior e inferior inclinados, formando todos estos componentes el elemento regulador (6), y porque en la pared lateral frontal de la carcasa (1), se forma el carril inclinado (10) cerrado por la pared interna (17) y el que conforma las rampas (14) y (7), ambas inclinadas de forma que al estar la guía (13) destinada a alojarse en el carril inclinado (10), el deslizamiento de los bordes de esta sobre los rampas (14) y (17), produzca la elevación o descenso de la misma y en consecuencia a través del brazo (12) el posicionamiento del casquillo (9) y la regulación del grado de evaporación.

3ª.- Dispositivo evaporador de productos volátiles con intensidad de evaporación variable, mediante la interposición de un casquillo móvil, según la reivindicación 1ª, caracterizado porque el desplazamiento axial del casquillo desplazable (9), de manera opcional, se realiza por cualquier técnica, procedimiento o medios que se estimen apropiados y que tengan la misma función de desplazar axialmente el casquillo desplazable (9) para crear el efecto chimenea con el que se gradúa la evaporación.

4ª.- Dispositivo evaporador de productos volátiles con intensidad de evaporación variable, mediante la interposición de un casquillo móvil, según reivindicaciones 1ª y 2ª caracterizado porque, en un lugar visible de la carcasa (1) se dispone de una escala graduada (15) que identifica diferentes posiciones de la guía (13) y por lo tanto diferentes grados de evaporación.

5ª.- Dispositivo evaporador de productos volátiles con intensidad de evaporación variable, mediante la