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(54) **Title:** MOSQUITO COIL COMBUSTION CASE

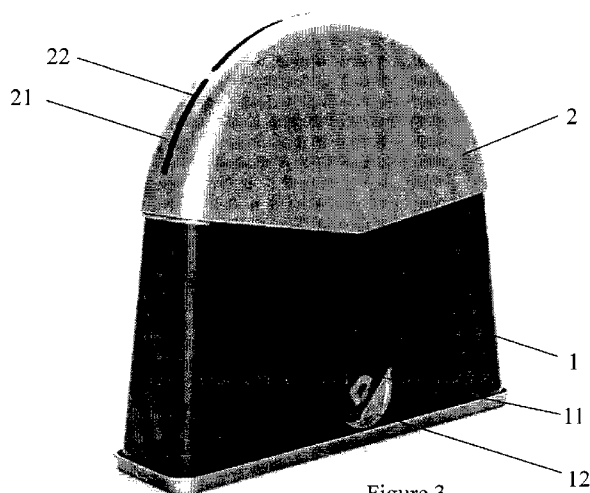


Figure 3

(57) **Abstract:** A mosquito coil combustion case comprises a case body having an enclosed accommodation space (10, 20) to accommodate the mosquito coil which is supported in the accommodation space (10, 20) along the vertical direction without contacting with the sidewall of the accommodation space (10, 20), a fume directing mechanism which is provided on the case body along the rising direction of the fume, and an inlet port (11) having an adjusting mechanism (12) to adjust the opening of the inlet port (11). The fume directing mechanism is communicated with the accommodation space (10, 20) of the case body to direct and discharge the fume generated from combustion of the mosquito coil out from the case body. The inlet port (11) is provided in the lower portion of the case body. The fume containing active ingredients generated from combustion is discharged from the case body through the fume directing mechanism, thus effectively reducing condensation of active ingredients onto the inner wall surface of the case body and improving efficiency for volatilization of active ingredients. The speed and time for combustion of the mosquito coil can be effectively adjusted by adjusting the opening of the inlet port (11).



Mosquito coil combustion case

Technical field

The utility model relates to mosquito repellent devices, and more particularly, relates to a mosquito coil combustion case accommodating a mosquito coil therein for safe combustion, and capable of adjusting and controlling speed of combustion and efficiency for volatilization of the ingredients in the mosquito coil.

Background

There are two types of brackets primarily used for combustion of the mosquito coil common in daily life, wherein one is a triangular iron bracket which is light in weight, less stable and prone to fall and can only support the end of mosquito coil with a hole but cannot support the remainder without that hole once the coil is broken off, causing inconvenience to user, and even burning articles or starting a fire when some users probably insert and clip the broken coil to fix them into the gap of inflammable matter indoors; another is a supporting disk with a fixed net on which the burning mosquito coil is placed, but there are lots of contact sites with the mosquito coil, thus affecting efficiency for combustion of the mosquito coil and volatilization of the active ingredients that effectively repel and kill mosquito. Moreover, the combustion of mosquito coil of these two mosquito coil combustion apparatuses are directly exposed to outside when they are in use, hence, a potential danger of fire accident.

To address the safety issue caused by open fire from combustion of mosquito coil, a mosquito coil case that can accommodate a burning mosquito coil therein is designed. For example, Chinese Utility Model Patent CN200420090403.1 discloses a “safe, time-extending and enhanced combustor of mosquito coil”, which concerns a mosquito coil case device that can accommodate a burning mosquito coil therein. The mosquito coil can be placed in the transversely arranged case, wherein a through hole is provided in the upper portion of the case to discharge the fumes generated from combustion of the mosquito coil via that through hole, and another through hole whose aperture area is adjustable is provided in the lower portion of the case to

adjust speed of combustion for the mosquito coil. However, this mosquito coil case is often bigger in size and occupies larger space and area. As a result, in another Utility Model Patent (CN200820095054.0), in order to overcome the deficiencies that the horizontal mosquito coil case occupies larger area and is less convenient for emptying the mosquito coil ash, it provides a vertical mosquito coil combustion case convenient for pouring out the coil ash, comprising a bottom case and a combustion case provided at the top of the bottom case, wherein an opening is provided in front of the bottom case and further a drawer is provided inside the opening, the bottom of the combustion case is communicated with the bottom case, the top of the combustion case is provided with a movable cap and the top of the central section of the combustion case backwall is provided with a notch in which a combustion hook is provided, and several venting through holes are provided at the top of the movable cap. In use, the mosquito coil is safely burnt in the combustion case once the movable cap is closed, and when the combustion is finished, the bottom case drawer could be drawn out, allowing the coil ash in the drawer to be emptied. The solution is to divide the mosquito coil case into three individual components including a bottom case, a drawer and a movable cap, but the missing of construction members easily occurs in daily use, thereby causing the inconvenience in use of the mosquito coil case.

In addition, Chinese Utility Model Patent CN200720300245.1 also discloses a vertical round mosquito coil case, as shown in Fig. 1, comprising a case base 1 and a round mosquito coil case 2, wherein the round mosquito coil case consists of an upper half-round case 3 and a lower half-round case 4 with one side of them connected through a hinge and another side connected and locked using a snap ring, and wherein the surface of the arc shaped side of the lower half-round case 4 connected with the case base 1 is provided with a plurality of small round holes 7, the two plane lateral surfaces of the upper half-round case 3 are provided with a plurality of small holes 5, the center of the lower half-round case 4 is provided a pin hole 6 used for pin installation. It is advantageous that the fire accident can be prevented during combustion of the mosquito coil, and, even if the burning

mosquito coil is kicked over it won't roll around, which ensures the reliability and safety. However, the mosquito coil case in the prior art is provided with small holes 5 located in the upper portion for discharging fumes and small round holes 7 located at the bottom for air admission, but not with a mechanism to adjust the opening of these holes, such that it is not possible to effectively adjust speed of combustion and volatilization of active ingredients for the mosquito coil; moreover, the small holes 5 used for discharging fumes are provided on the two plane lateral surfaces of the upper half-round case 3, with the fumes generated from combustion of mosquito coil and the volatilized active ingredients rising along the vertical direction and discharged from these holes 5 on two sides of the rising direction of fumes till filling up the headspace of the mosquito coil case, resulting in condensation of considerable ingredients in the fumes onto the inner wall at the top of the mosquito coil case and affecting the mosquito repellent and killing effect.

Summary of the Utility Model

It is an object of the utility model to provide an adjustable mosquito coil combustion case, to overcome the deficiencies and drawbacks existing in the prior art, which may adjust speed of combustion of the mosquito coil and improve its efficiency for volatilization of active ingredients thereby enhancing the mosquito repellent and killing effect while ensuring the combustion of the mosquito coil.

The object of the utility model is achieved via the following technical solution:

A mosquito coil combustion case comprises a case body having an enclosed accommodation space to accommodate the mosquito coil which is supported in the accommodation space along the vertical direction without contact with the sidewall of the accommodation space, a fume directing mechanism is provided on the case body along the rising direction of fume, the fume directing mechanism is communicated with the accommodation space of the case body to direct and discharge the fumes generated from combustion of the mosquito coil out from the case body, and an inlet port having an adjusting mechanism is provided in the lower portion of the case body, which can adjust the opening .

Furthermore, the fume directing mechanism described in the embodiment above comprises an opening provided at the top of the case body, and a guidance portion provided inside the accommodation space of the case body and extending to the opening along the oblique direction to direct the fumes to the opening.

Furthermore, the mosquito coil combustion case in the embodiment above comprises a case body consisting of a bottom case and a cap, and the cap is connected to one side at the top of the bottom case through a hinge mechanism.

Furthermore, an opening is provided at the top sidewall of the cap described in the embodiment above, and a guidance portion extending to the opening along the oblique direction is formed on the sidewall beside the opening, which may direct the fumes generated from combustion of the mosquito coil to the opening.

Furthermore, an inlet port having an adjusting mechanism to adjust the opening is provided in the lower portion of the sidewall on one side of the bottom case described in the embodiment above.

Furthermore, the inlet port on the bottom case described in the embodiment above is configured into sectorial shape with a pivoting portion provided at its center.

Furthermore, the adjusting mechanism described in the embodiment above comprises a connecting portion, a blocking portion in the same plane with the connecting portion and corresponding to the position of the sectorial inlet port and blocking the inlet port, and a handle portion which is generally perpendicular to the blocking portion for application of force by user, with the connecting portion rotatably connected to the pivoting portion of the aforementioned inlet port.

Furthermore, a support piece used to support and position the mosquito coil is provided in the mosquito coil combustion case described in the embodiment above.

Furthermore, the supporting piece described in the embodiment above is provided as a bent lever comprising a main body, an installation portion which is located at one end of the main body and generally perpendicular to the main body to position the mosquito coil, and a connecting portion which is located at another end

of the main body and rotatably connected to the case body.

Furthermore, the connecting portion of the support piece described in the embodiment above is provided as pivoting at the top edge of the bottom case adjacent to the junction of the cap and the bottom case, and provided to interlink with the cap.

Furthermore, the supporting piece described in the embodiment above, its main body is rotated to the position substantially perpendicular to the top surface of the bottom case when the cap is opened, and its main body is accordingly rotated to the position substantially parallel to the top surface of the bottom case when the cap is closed.

Furthermore, the top surface of the bottom case described in the embodiment above is provided with a positioning mechanism used to further hold and position the mosquito coil accommodated in the case body.

Furthermore, the positioning mechanism described in the embodiment above is provided as saw tooth with a pitch corresponding to the clearance of the mosquito coil.

Compared with the prior art, a fume directing construction is provided on the case body of the utility model, such that the fumes containing active ingredients generated from combustion are discharged from the case body through the fume directing construction, avoiding considerable fumes from accumulating inside the case body and excessive contact with the inner wall surface of the case body, thereby effectively reducing condensation of active ingredients onto the inner wall surface of the case body and improving efficiency for volatilization of active ingredients. Moreover, an inlet port having an adjusting mechanism is provided in the lower portion of the case body of the utility model, which may achieve effective adjustment in speed and time for combustion of the mosquito coil.

Brief description of the drawings

Fig. 1 is a schematic view for the existing vertical mosquito coil combustion case.

Fig. 2 is an exploded perspective view for the mosquito coil combustion case according to the utility model.

Fig. 3 is a perspective view for the mosquito coil combustion case according to the utility model.

Fig. 4 is perspective view for the mosquito coil combustion case according to the utility model in open state.

Fig. 5 is a schematic section view for the mosquito coil combustion case according to the utility model.

Fig. 6 is a partial enlarged view for the mosquito coil combustion case according to the utility model, showing an inlet port having an adjusting mechanism.

In these drawings, elements indicated by each reference numeral are listed below:

Bottom case 1	Accommodation space 10、 20
Inlet port 11	Pivoting portion 110
Adjusting mechanism 12	Connecting portion 121
Blocking portion 122	Handle portion 123
Positioning mechanism 13	Cap 2
Top sidewall 21	Opening 22
Guidance portion 23	Support piece 3
Main body 30	Installation portion 31
Connecting portion 32	

Description of the preferred embodiments

It should be appreciated that, according to the technical solution of the present utility model, those skilled in the art can propose multiple constructions and implementations that are interchangeable without departing from the spirits of the utility model. Therefore, the following embodiments and drawings are only

exemplary explanation for the technical solution of the utility model, but should not be considered as the entirety of or limitations/restrictions to the technical solution of the utility model.

It should be noted that the terms of orientation “upper (or top)” and “lower (or bottom)” used in the following description refer to upper and lower directions in the drawings, the terms “inside” and “outside” respectively refer to directions toward or away from the drawings or the geometrical center of a specific part in the drawings.

As shown in Figs. 2 to 4, the mosquito coil combustion case of the utility model comprises a case body consisting of a bottom case 1 and a cap 2, wherein the cap 2 is connected to one side at the top of the bottom case 1 through a hinge mechanism, and can pivot relative to the bottom case 1 and thus open the case body. Accommodation spaces 10, 20 are respectively formed inside bottom case 1 and cap 2, which are communicated together, when the cap 2 is closed, to form an accommodation space of the case body to accommodate the mosquito coil.

As shown in Figs. 2 to 6, in a preferred embodiment, the bottom case 1 is provided as a generally trapezoidal box, in the lower portion of whose sidewall an inlet port 11 having an adjusting mechanism 12 to adjust the opening is provided. The amount of air flowed into the accommodation space 10 of the bottom case 1 can be controlled through adjustment in the opening of the inlet port 11 by the adjusting mechanism 12, so as to control speed and time for combustion of the mosquito coil. In a preferred embodiment, the inlet port 11 is configured into sectorial form with a pivoting portion 110 provided at its center. The adjusting mechanism 12 comprises a connecting portion 121, a blocking portion 122 in the same plane with the connecting portion 121 and corresponding to the position of the sectorial inlet port 11 and blocking the inlet port 11, and a handle portion 123 which is generally perpendicular to the blocking portion 122 for application of force by user, with the connecting portion 121 rotatably connected to the pivoting portion 110, enabling the adjusting mechanism 12 to rotate around the pivoting portion 110, so that the adjustment in the opening of the inlet port 11 is achieved by changing its rotary angle and thus to change the overlapped degree between the blocking portion

122 and the inlet port 11. It should be appreciated that the constructions of the inlet port 11 and/or adjusting mechanism 12 will not be limited to the foregoing embodiments, and all equivalents or alterations based on the idea of the utility model fall within the scope of the utility model.

With reference to Fig. 5, in a preferred embodiment, the cap 2 is provided as a generally half-round box. In such a manner, in a preferred embodiment, the mosquito coil case of the utility model is provided as vertical version, with the mosquito coil burnt vertically. The top sidewall 21 of the cap 2 is arc shaped and provided with an opening 22, and a guidance portion 23 extending to the opening 22 along the oblique direction is formed on the sidewall beside the opening 22, which may direct the fumes generated from combustion of the mosquito coil to the opening 22. A fume directing mechanism is formed together by the opening 22 and the guidance portion 23, so as to discharge the fumes generated from combustion of the mosquito coil out from the case body. As will be understood by those skilled in the art, the utility model is characterized in that a fume directing mechanism is provided along the rising direction of fume; in addition, the constructions of the guidance portion 23 are not limited to arc shaped sidewall but can also be provided as oblique plane sidewall, oblique guide plate or other equivalent substitutions according to the principle of guiding the fume into the opening 22.

With reference to Figs. 2 and 4, a support piece 3 is provided in the mosquito coil combustion case of the utility model to support and position the mosquito coil, allowing the mosquito coil to be safely and reliably fixed and installed in the accommodation space of the case body without contact with the sidewall of that accommodation space. In a preferred embodiment, the supporting piece 3 is provided as a bent lever comprising a main body 30, an installation portion 31 which is located at one end of the main body 30 and generally perpendicular to the main body 30, and a connecting portion 32 which is located at the other end of the main body 30 and rotatably connected to the case body. The installation portion 31 is configured to match with the hole at the center of the coil, so as to place the mosquito coil onto the support piece 3. The connecting portion 32 is provided as

pivoting at top edge of the bottom case 1 adjacent to the junction of the cap 2 and the bottom case 1, and provided to interlink with the cap 2, and the supporting piece 3 is also correspondingly rotated to the position substantially perpendicular to the top surface of the bottom case 1 when the cap 2 is opened, thereby facilitating installation of the mosquito coil by user; and the supporting piece 3 is also correspondingly rotated to the position substantially parallel to the top surface of the bottom case 1 when the cap 2 is closed, allowing the mosquito coil to be accommodated in the case body.

Furthermore, in a preferred embodiment, the top surface of the bottom case 1 is provided with a positioning mechanism 13 used to further hold and position the mosquito coil accommodated in the case body, preventing the mosquito coil from contacting the sidewall of the case body due to shaking or falling off from the support piece 3. With reference to Fig. 4, the positioning mechanism 13 is provided as saw tooth with a pitch corresponding to the clearance of the mosquito coil to avoid excessive contact with the mosquito coil which may affect the combustion efficiency.

As will be understood by those skilled in the art, the fumes generated from combustion of the mosquito coil contain condensable active ingredients used to repel and kill the mosquito, and these active ingredients are volatilized by heat in combustion of the mosquito coil, but are condensed onto the inner wall surface due to contact with the inner wall of the case body prior to escaping from the case body when the mosquito coil is accommodated in the case body having an enclosed space. In prior art, the fumes will be abundantly and densely accumulated in the case body prior to being discharged from the opening of the mosquito coil case since there is not any obliquely provided fume discharge mechanism, such that considerable active ingredients are condensed onto the inner wall surface of the case body, thereby substantially reducing content of active ingredients in the fumes escaped from the case body and thus drastically weakening the mosquito repellent and killing effect. As a result, a fume directing mechanism used to direct and discharge the fumes generated from combustion of the mosquito coil outside the case body is provided

in the case body of the utility model, and preferably, the mosquito coil is burnt vertically in the case body, allowing the fumes containing active ingredients generated from combustion to be discharged from the case body through the fume directing construction, avoiding considerable fumes from accumulating inside the case body and excessive contact with the inner wall surface of the case body, thereby effectively reducing condensation of active ingredients onto the inner wall surface of the case body and improving efficiency for volatilization of active ingredients. More specifically, the mosquito coil combustion case of the utility model is characterized in that: (1) a fume directing construction is provided in the case body to direct and discharge the fumes generated from combustion of the mosquito coil outside the case body; the fume directing construction comprises an opening 22 provided along the rising direction, for example, at the top of the case body, and a guidance portion 23 provided inside the accommodation space of the case body and extending to the opening 22 along the oblique direction to direct the fumes to the opening 22. (2) an inlet port 11 having an adjusting mechanism 12 is provided in the lower portion of the case body, wherein the opening of the inlet port 11 is adjustable and the speed and time for combustion of the mosquito coil are controlled by adjusting the opening of the inlet port 11. (3) the mosquito coil is preferably fixed in the case body, thus enabling it to be burnt vertically.

Although one of the embodiments of the utility model is described in detail, these explanations are not limitations to the scope of the utility model. As will be understood to those skilled in the art, all obvious modifications and alterations to the embodiment as described above are included in the utility model.

Claims

1. A mosquito coil combustion case, comprising a case body having an enclosed accommodation space to accommodate the mosquito coil which is supported in the accommodation space along the vertical direction without contact with the sidewall of the accommodation space, characterized in that, a fume directing mechanism is provided on the case body along the rising direction of fume, the fume directing mechanism is communicated with the accommodation space of the case body to direct and discharge the fumes generated from combustion of the mosquito coil out from the case body, and an inlet port having an adjusting mechanism is provided in the lower portion of the case body, which can adjust the opening.

2. The mosquito coil combustion case according to claim 1, characterized in that the fume directing mechanism comprises an opening provided at the top of the case body, and a guidance portion provided inside the accommodation space of the case body and extending to the opening along the oblique direction to direct the fumes to the opening.

3. The mosquito coil combustion case according to claim 1 or 2, characterized in that the case body comprises a bottom case and a cap combined with the bottom case, and the cap is connected to one side at the top of the bottom case through a hinge mechanism.

4. The mosquito coil combustion case according to claim 3, characterized in that the opening is provided at the top sidewall of the cap, and the guidance portion extending to the opening along the oblique direction is formed of the sidewall beside the opening.

5. The mosquito coil combustion case according to claim 4, characterized in

that an inlet port having an adjusting mechanism to adjust the opening is provided in the lower portion of the sidewall on one side of the bottom case.

6. The mosquito coil combustion case according to claim 4, characterized in that the inlet port on the bottom case is configured into sectorial shape with a pivoting portion provided at its center.

7. The mosquito coil combustion case according to claim 6, characterized in that the adjusting mechanism comprises a connecting portion, a blocking portion in the same plane with the connecting portion and corresponding to the position of the sectorial inlet port and blocking the inlet port, and a handle portion which is generally perpendicular to the blocking portion for application of force by user, with the connecting portion rotatably connected to the pivoting portion of the inlet port.

8. The mosquito coil combustion case according to claim 7, characterized in that a support piece used to support and position the mosquito coil is provided in the mosquito coil combustion case.

9. The mosquito coil combustion case according to claim 8, characterized in that the supporting piece is provided as a bent lever comprising a main body, an installation portion which is located at one end of the main body and generally perpendicular to the main body to position the mosquito coil, and a connecting portion which is located at another end of the main body and rotatably connected to the case body.

10. The mosquito coil combustion case according to claim 9, characterized in that the connecting portion of the support piece is provided as pivoting at the top edge of the bottom case adjacent to the junction of the cap and the bottom case, and

provided to interlink with the cap.

11. The mosquito coil combustion case according to claim 10, characterized in that the main body of the support piece is rotated to the position substantially perpendicular to the top surface of the bottom case when the cap is opened, and the main body is accordingly rotated to the position substantially parallel to the top surface of the bottom case when the cap is closed.

12. The mosquito coil combustion case according to claim 11, characterized in that the top surface of the bottom case is provided with a positioning mechanism used to further hold and position the mosquito coil accommodated in the case body.

13. The mosquito coil combustion case according to claim 12, characterized in that the positioning mechanism is provided as saw tooth with a pitch corresponding to the clearance of the mosquito coil.

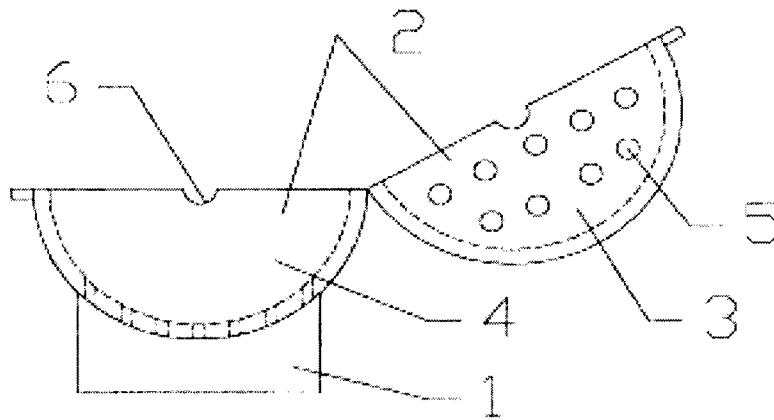


Figure 1

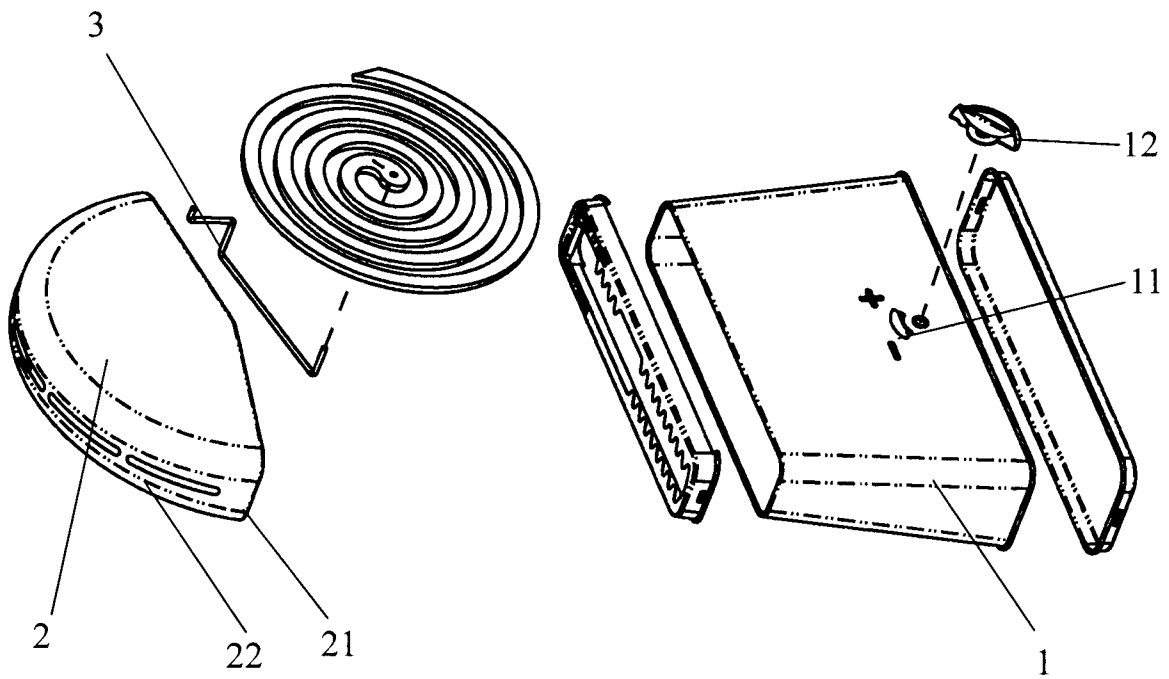


Figure 2

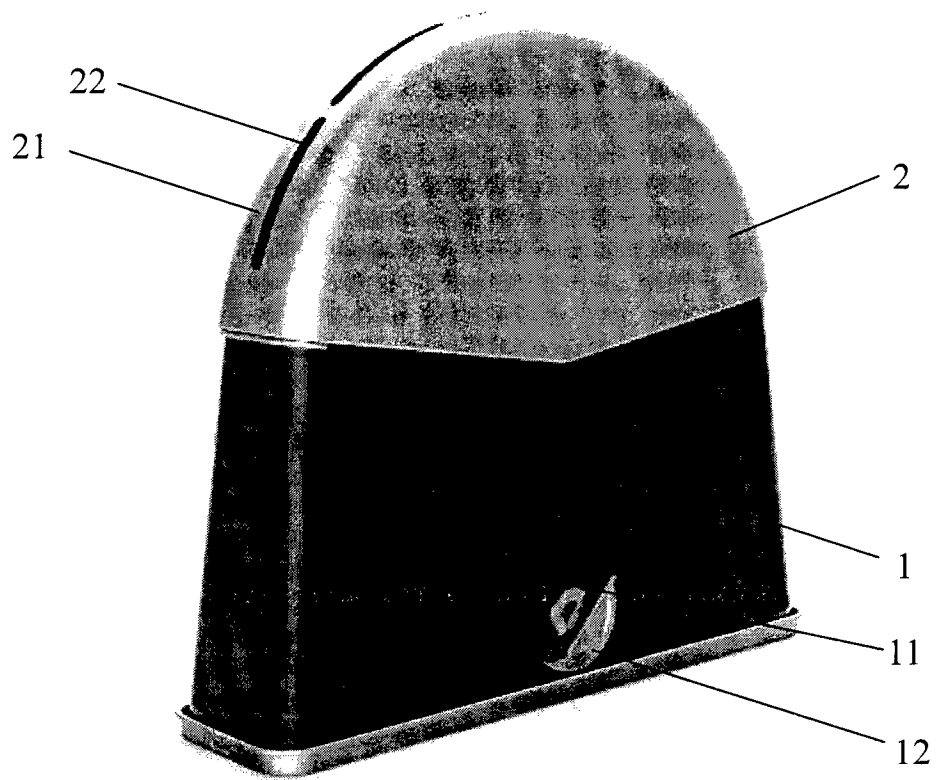


Figure 3

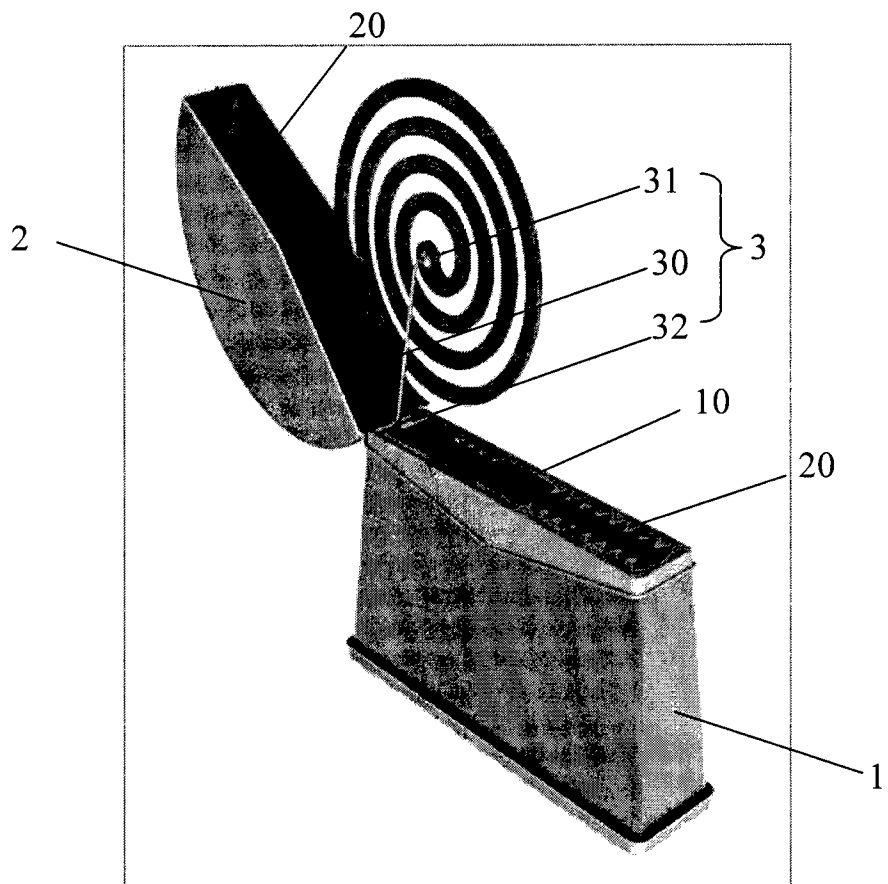


Figure 4

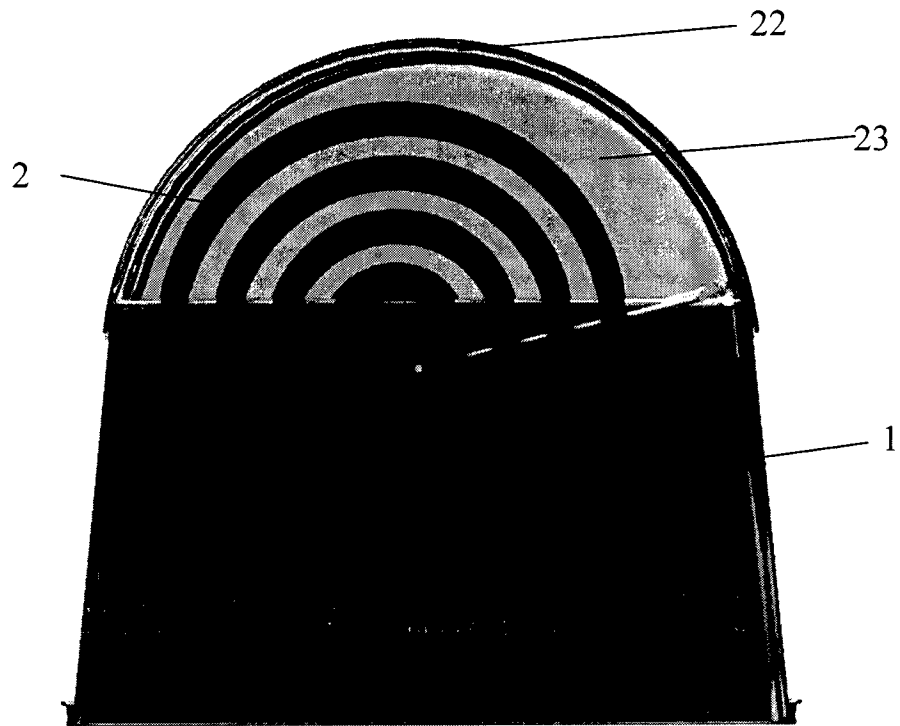


Figure 5

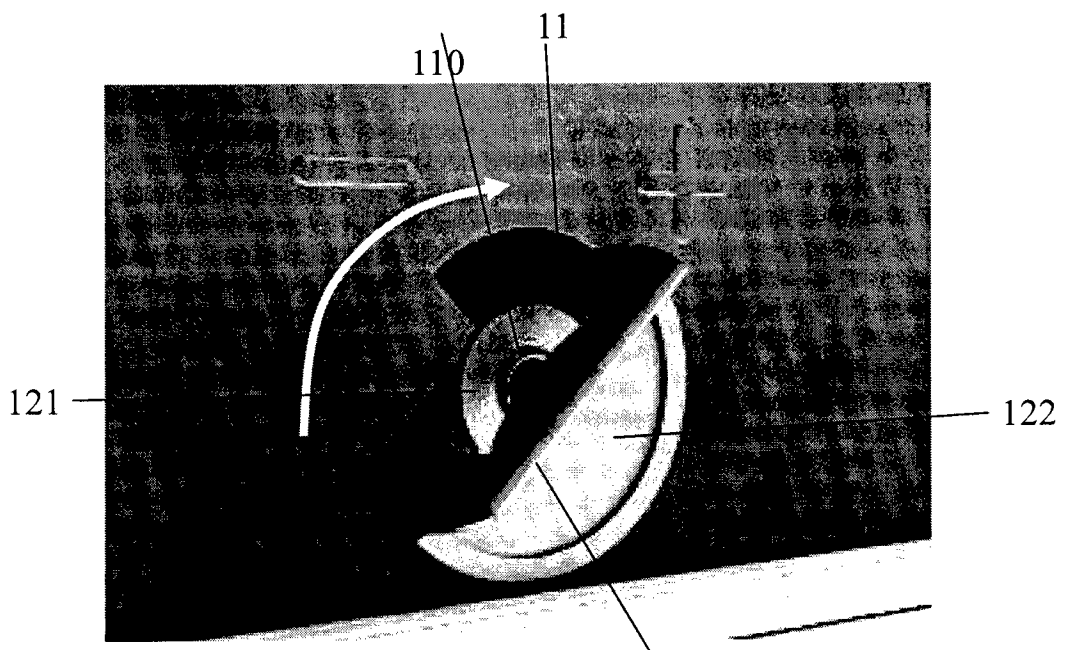


Figure 6

INTERNATIONAL SEARCH REPORT

International application No.

PCT/CN2012/000001

A. CLASSIFICATION OF SUBJECT MATTER

See extra sheet

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)

IPC:A01M 1/-,A01M 13/-

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)

CNPAT,CNKI,CNXTX,EPODOC,WPI: mosquito, enclose, fumigate, coil, burn, combust, adjust, accommodate,

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	CN86201108U(ZHOU, Peitai)21 Jan. 1987(21.01.1987)page 2 to page 5 of the description and fig.1 to fig.3	1-2
Y		3-8
Y	CN201150228Y(FAN, Yu)19 Nov. 2008(19.11.2008) see page 1 of the description and fig.1	3-8
A	CN201222945Y(HUANG, Xinjian)22 Apr. 2009(22.04.2009)the whole document	1-13
A	US4126958A(YOKOYAMA Y)28 Nov. 1978(28.11.1978) the whole document	1-13
A	CN86205954U (CHEN, Jianxin et al.)29 Jul. 1987(29.07.1987) the whole document	1-13

☐ 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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PCT/CN2012/000001

Form PCT/ISA /210 (patent family annex) (July 2009)

INTERNATIONAL SEARCH REPORT

International application No.

PCT/CN2012/000001

Continuation of: A. CLASSIFICATION OF SUBJECT MATTER

A01M 13/00(2006.01) i

A01M 1/20(2006.01) i