

A Mosquito Repelling Device

Background and Field of the Invention

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This invention relates to a mosquito repelling device which uses ozone.

Ozone has been used as a disinfectant, for example to disinfect laundry or water. Ozone has also been used as a deodorizer to remove foul smell from the
10 air.

It is an object of the present invention to propose a mosquito repelling device using ozone, and/or to provide the public with a useful choice.

15 Summary of the Invention

In a first aspect of the invention, there is provided a mosquito repelling device comprising an ozone generator arranged to produce ozone at a concentration for repelling mosquitoes.

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Preferably, the ozone generator is configured to produce the ozone at a concentration of more than 50 mg/hour. Such an ozone concentration has been found to effectively repel mosquitoes. More specifically, the ozone generator may be configured to produce the ozone at a concentration of between 50
25 mg/hour and 200 mg/hour.



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The mosquito repelling device may comprise a fan for discharging the ozone upwards and away from the mosquito repelling device. This is to expel the ozone to a greater distance into the environment so that the device may be
5 more effective.

The mosquito repelling device may comprise a hemispheric cover with vents which allow the discharge of the ozone. The hemispheric shape adds to the aesthetic appeal of the mosquito repelling device. Such a shape also adds to
10 the stability of the mosquito repelling device. Other shapes are envisaged, for example an elongate, cylindrical and tall housing but this may not be preferred since the device may topple easily.

Preferably, the ozone generator is configured to produce the ozone at
15 different time periods. It is possible for the ozone generator to continuously produce ozone but it has been found that this is not necessary. Instead, it has been found that producing ozone at particular time intervals is as effective in repelling mosquitoes, while reducing power consumption and not generating too much ozone which may cause discomfort to people.

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The mosquito repelling device may comprise a switch selectable by a user to select different time intervals for ozone operation. For example, the different time periods may be long or short, depending on application and the location of where the device is to be used.

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Preferably, the mosquito repelling device is configured to produce ozone at hourly intervals. The hourly intervals may be 12 or 24 hourly intervals.

The mosquito repelling device may comprise a further switch for selecting
5 concentration of the ozone to be produced by the ozone generator.

As it can be appreciated, the first aspect relates to a mosquito repelling device using ozone to repel mosquitoes and indeed, the usage of ozone in this particular manner forms a second aspect of the present invention.

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Brief Description of the Drawings

An embodiment of the invention will now be described, by way of example, with reference to the accompanying drawings in which,

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Figure 1 is a top and side view of a mosquito repelling device according to a preferred embodiment of this invention;

Figure 2 is a front view of the mosquito repelling device of Figure 1;

Figure 3 is a top view of the mosquito repelling device of Figure 1 with a top
20 cover removed to show the internal components; and

Figure 4 is a functional block diagram of the mosquito repelling device of Figure
1.

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Detailed Description of the Preferred Embodiments

Figure 1 is a top and side view of a mosquito repelling device 500, and Figure 2 is a view of the mosquito repelling device 500 from the front. The mosquito repelling device 500 includes a top hemispheric cover 502 and a circular base 504 to enclose the rest of the components of the mosquito repelling device 500. The hemispheric cover 502 includes vents 506 near the upper most surface of the hemispheric cover 502 to discharge air and ozone which is produced by the mosquito repelling device 500.

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As shown in Figure 2, the base 504 includes spacers 508 to space the mosquito repelling device 500 from a surface, such as the ground. The mosquito repelling device 500 also includes a light emitting element 510 which is provided along the circumference of the base 504 and thus, the mosquito repelling device 500 may also be used as a light source at night. The mosquito repelling device 500 thus includes a night light on/off switch 518 to turn on or off the light emitting element 510.

The mosquito repelling device 500 further includes two switches/selectors at the front, as shown in Figures 1 and 2. There is a timer switch 524 which defines how long the mosquito repelling device 500 operates. In this embodiment, the timer switch 524 has two settings – 12 hours or 24 hours. If the timer switch 524 is selected to 12 hours, ozone is produced in 12 cycles i.e. for a predetermined time period every hour. If the timer switch 524 is set to 24 hours, the mosquito repelling device 500 is set to a 24-hourly cycle.

The predetermined time period is set by a Hi/Low switch 520 which varies an operating time of the amount of ozone produced. Setting the Hi/Low switch 520 to "High" configures the mosquito repelling device 500 to discharge ozone for a longer time period during each hourly cycle. Setting the Hi-Low switch 520 to "Low" configures the mosquito repelling device 500 to discharge ozone for a shorter time period during each hourly cycle. It should be appreciated that other time periods are envisaged depending on application.

- 10 The mosquito repelling device also includes a main power switch 525 (see Figure 4) disposed at the underside of the base 504 to turn the mosquito repelling device 500 on or off.

Figure 4 is a functional block diagram for the mosquito repelling device 500 which comprises an ozone generator 512, a processor 514, the timer switch 524, the Hi-Low switch 520, the power switch 525, the light emitting element 510 and the night light on/off switch 518 mentioned earlier. The mosquito repelling device 500 also includes a fan 526 which is used to discharge the ozone generated through the vents 506.

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The ozone generator 512 is configured to produce ozone using corona discharge and at a concentration suitable for repelling mosquitoes. A toggle switch 523 (see Figure 4 but not shown in Figures 1, 2 and 3) is provided at the base of the mosquito repelling device 500 for selecting the concentration (high or low) of the ozone to be produced by the ozone generator.

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The ozone generator 512 is configured to produce ozone concentrations of between 50 mg/hour and 200 mg/hour which have been found to be effective for repelling mosquitoes. Concentrations below 50 mg/hour have been found
5 not to be effective. It is possible for the concentrations to be above 200 mg/hour which may increase the effectiveness of repelling mosquitoes but this may result in discomfort for people (e.g. stronger ozone odour) since the mosquito repelling device is intended to be operated in the presence of people.

- 10 The ozone generator 512 is controlled by the processor 514 to produce ozone at different hourly cycles and concentrations depending on the settings of the timer switch 524, the Hi/Low switch 520 and the toggle switch 523.

The power source 522 may be in the form of an electrical mains power supply
15 or a battery pack, and power is delivered to the rest of the components of the device when the power switch 525 is switched ON. The battery pack is particularly useful if the device 500 is used outdoors, thereby increasing portability of the device.

- 20 To use the mosquito repelling device 500, the device 500 is located at a place which is free of obstruction to repel mosquitoes. For example, it is preferred to place the mosquito repelling device 500 on the ground or floor and at least 2 metres away from any obstacles. It is also recommended that the mosquito repelling device 500 is not placed at a location which is close to a person or a

bed to reduce inhaling of the ozone which is produced which may be uncomfortable to some.

The user next adjusts the timer switch 524 and the Hi-Low switch 520 to select
5 the hourly cycle and time period, and turns on the mosquito repelling device 500
by turning ON the power switch 525. When a cycle is reached, the processor
514 activates the ozone generator 512 automatically to produce ozone at a
concentration (set by the toggle switch 523) for a time period set by the Hi-Low
switch 520. The ozone produced is drawn by the fan 526 and discharged
10 through the vents 506 in the direction X (see Figure 2) and into the atmosphere
or surrounding. The effect of this is that the ozone at this concentration level is
able to repel mosquitoes.

The described embodiments should not be construed as limitative. For
15 example, in addition to corona discharge, the ozone generator 512 may use
other forms of generation techniques such as ultraviolet light or cold plasma.
Further, the timer switch 524 may be configured to have different hourly cycles,
not 12 or 24 hours. Likewise, the Hi-Low switch 520 may have other time
periods for the user to select depending on application. The preferred
20 embodiment teaches a periodic production of ozone although continuously
producing ozone is also envisaged but not preferred. This is because it has
been found that the periodic production of ozone is as effective, if not more
effective, in the repelling of mosquitoes, thus reducing electricity consumption,
and perhaps less discomfort to some people since the odour of the ozone might
25 be sensitive to some.

Having now fully described the invention, it should be apparent to one of ordinary skill in the art that many modifications can be made hereto without departing from the scope as claimed.

CLAIMS

1. A mosquito repelling device comprising an ozone generator arranged to
5 produce ozone at a concentration for repelling mosquitoes.
2. A mosquito repelling device according to claim 1 wherein, the ozone
generator is configured to produce the ozone at a concentration of more
than 50 mg/hour.
- 10 3. A mosquito repelling device according to claim 1 or 2, wherein the ozone
generator is configured to produce the ozone at a concentration of
between 50 mg/hour and 200 mg/hour.
- 15 4. A mosquito repelling device according to any preceding claim, further
comprising a fan for discharging the ozone upwards and away from the
mosquito repelling device.
- 20 5. A mosquito repelling device according to any preceding claim, further
comprising a hemispheric cover with vents which allow the discharge of
the ozone.
- 25 6. A mosquito repelling device according to any preceding claim, wherein
the ozone generator is configured to produce the ozone at different time
periods.

7. A mosquito repelling device according to claim 6, further comprising a switch selectable by a user to select the different time periods.
- 5 8. A mosquito repelling device according to any preceding claim wherein the ozone generator is configured to produce ozone at hourly intervals, depending on settings.
9. A mosquito repelling device according to any preceding claim, further
10 comprising a further switch for selecting concentration of the ozone to be produced by the ozone generator.
10. Use of ozone as a mosquito repellent.

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