STERILISER UNIT

Field of the Invention

This invention relates to a steriliser unit. In particular the invention is concerned with a steriliser unit which can be used in sterilising an absorbent body, such as a sponge.

Background Art

The following discussion of the background art is intended to facilitate an understanding of the present invention only. The discussion is not an acknowledgement or admission that any of the material referred to is or was part of the common general knowledge as at the priority date of the application.

Sponges are used in a range of applications for cleaning liquid impervious surfaces. Such applications include domestic cleaning of baths, basins, floors and table tops. Sponges are also used in a range of medical cleaning applications.

Typically sponges are produced from porous materials which display good liquid absorbing characteristics, particularly for absorbing water and water-based solutions. Materials employed in producing sponges generally include cellulose wood fibres and foamed plastic polymers. Although some natural sponges are still commercially available for use in cleaning applications, most natural sponges are used as body/facial sponges or as decorating tools for sponge painting. Synthetic sponges, on the other hand, are generally produced from low-density polyether, polyester and polyvinyl acetate (PVC).

A drawback associated with conventional sponges is that they can provide a favourable breeding ground for harmful bacteria or fungi. This is particularly true in the case where a sponge is allowed to remain wet between periods of use.

One manner in which bacteria infecting a sponge can be killed is by soaking the sponge in clean water and thereafter subjecting it to electromagnetic waves inside a conventional microwave oven. A disadvantage, however, in making use of this

method of sterilising a sponge is that the sponge could be set alight if it was not properly soaked prior to being placed inside the microwave oven.

It is an object of the present invention to provide an alternative unit which can be used in sterilising an absorbent body, such as a sponge.

Disclosure of the Invention

According to the present invention there is provided a steriliser unit for sterilising an absorbent body, such as a sponge, the steriliser unit comprising:

- a container for holding a disinfectant, the container providing a soak position and a discharge position; and

- a discharge unit for cooperation with the container, the discharge unit defining a compression compartment in which the absorbent body can be held, the discharge unit further being movable between a release position in which the absorbent body can be located within the compression compartment and a compression position in which the discharge unit will apply a compressive force on the absorbent body inside the compression compartment;

wherein the compression compartment can be located within the soak position of the container when the discharge unit is located in its release position, thereby allowing the absorbent body to absorb an amount of disinfectant, and further wherein the discharge unit can be moved to its compression position when the compression compartment is located in the discharge position of the container, such that the absorbent body is allowed to dispense the disinfectant which it had absorbed when it was located inside the soak position of the container.

Preferably the container includes a venting formation for in use allowing air, which is released by the absorbent body as it is caused to dispense its disinfectant, to vent to the atmosphere.

More preferably the container comprises an outer container body and an inner container body which are detachably connectable.

Advantageously the inner container body has a base which provides the soak position.

Advantageously the inner container body includes support edges which are raised above its base in order to provide the discharge position.

Typically the venting formation of the container is formed by a number of holes in the base of the inner container body and a number of protuberances located towards upper edges of the outer surface of the outer container body, and wherein outer surfaces of the inner container body define an outlet path for providing fluid communication between the holes in the base and the protuberances of the outer container body.

Preferably the discharge unit comprises a support member on which the absorbent body can be placed and a plunger which is movably connectable to the support member and wherein the compression compartment of the discharge unit is provided by an area between the support member and the plunger.

Preferably the plunger includes a number of legs.

Typically the support member includes a latticework structure having a number of lugs. Each lug in turn has a hole through which a leg of the plunger can slidably move.

Advantageously the discharge unit is configured to move from its release position to its compression position when the legs of the plunger are caused to slide through corresponding holes of the support member lugs.

Preferably the plunger comprises a first and a second plunger member which are detachably connectable.

More preferably the first plunger member includes a handle formation whereby a user can firstly cause the compression compartment to be moved between the soak position and the discharge position of the container and secondly cause the discharge unit to move between its release position and compression position.

Typically the legs are connected to the second plunger member and extend outwardly therefrom.

In an embodiment of the invention the legs of the plunger are provided with stops to prevent the lugs of the support member becoming separated from their corresponding plunger legs.

Brief Description of the Drawings

The invention will now be described in more detail, by way of example only, with reference to the accompanying representations wherein:

Figure 1 shows a perspective view of a steriliser unit in accordance with the invention;

Figure 2 shows a perspective view of the steriliser unit wherein an absorbent body held inside a compression compartment of a discharge unit of the steriliser unit, has been removed from a soak position of a container of the steriliser unit;

Figure 3 shows a perspective view of the discharge unit wherein it has been orientated such that the compression compartment can be located in the discharge position of the container;

Figure 4 shows a perspective view of the discharge unit located in its release position;

Figure 5 shows a bottom perspective view of the discharge unit located in its compression position and applying a compressive force on the absorbent body;

Figures 6(a), 6(b) and 6(c) respectively shown bottom, top and side perspective views of an inner container body of the container;

Figures 7(a) and 7(b) respectively show top and bottom perspective views of an outer container body of the container;

Figures 8(a) and 8(b) respectively show bottom and top perspective views of a first plunger member of the discharge unit; and

Figures 9(a) and 9(b) respectively show bottom and top perspective views of a second plunger member of the discharge unit.

Best Mode(s) for Carrying Out the Invention

Throughout the specification and claims, unless the context requires otherwise, the word "comprise" or variations such as "comprises" or "comprising", will be understood to imply the inclusion of a stated integer or group of integers but not the exclusion of any other integer or group of integers.

Figure 1 shows a perspective view of a dispenser unit in accordance with the present invention, generally indicated with the reference numeral 10. The steriliser unit 10 comprises a container 12 which holds a discharge unit 14. The illustrated steriliser unit 10 is useful for sterilising an absorbent body, particularly an absorbent body in the form of a sponge, with the use of a liquid disinfectant held inside the container.

In Figure 2 the discharge unit 14 is shown to have been removed from the container 12. It is pointed out that the container 12 comprises an inner container body and an outer container body, respectively indicated with the reference numerals 16 and 18, which are detachably connectable. The inner container body 16 includes a base 20 which is shaped as shown and provides a soak position 22 for the container 12. The inner container body 16 also includes support edges 24.1 and 24.2 which are raised above the base 20 in order to provide a discharge position 26 for the container 12. The purpose of the soak and discharge positions 22 and 26 will become apparent from the description which follows.

The discharge unit 14 defines a compression compartment 28 in which an absorbent body 30, here in the form of a sponge used for domestic cleaning purposes, is shown to be held. It is pointed out that the discharge unit 14 is orientated such that the compression compartment 28 together with the absorbent body 30 which it holds can be located inside the soak position 22 of the container 12, in use submerging the absorbent body 30 in liquid disinfectant and allowing it to absorb an amount of disinfectant.

In Figure 3 the discharge unit 14 has been orientated such that the compression compartment 28 can be located in the discharge position 26 of the container 12. When the discharge unit 14 is located in the discharge position 26 of the container 12, edge portions 32 of the discharge unit 14 will rest on the support edges 24.1 and 24.2 of the container 12. The discharge unit 14 of the illustrated embodiment comprises a support member 34 on which the absorbent body 30 can be placed. The discharge unit 14 also includes a plunger 36 which is movably connected to the support member 34 and wherein the compression compartment 28 is provided in the area between the support member 34 and the plunger 36.

The operation of the steriliser unit 10 will now be described with specific reference to Figure 4 and Figure 5 of the drawings. Figure 4 shows the discharge unit 14 located in a release position 38 in which the support member 34 and the plunger 36 are spaced apart such that the absorbent body 30 can be located within the compression compartment 28. Typically the discharge unit 14, located in its release position 38, will be located in the soak position 20 of the container 12 when it is required to steriliser the absorbent body 30. With the discharge unit 14 located in its release position 38 inside the soak position 22 of the container 12, the absorbent body 30 will be allowed to absorb an amount of disinfectant liquid, thereby destroying fungi and bacteria which may inhabit the absorbent body 30.

When a user now requires use of the absorbent body 30 it will first be necessary to dispense the liquid disinfectant which had been absorbed thereby. The first step in dispensing the disinfectant will be to remove the discharge unit 14 from the container 12 and thereafter orientating it in the manner shown in Figure 3, such that the edge portions 32 of the discharge unit 14 are aligned with the support edges 24.1 and 24.2 of the container 12. Hereafter the support member 34 is placed on the support edges 24.1 and 24.2, thereby locating the discharge unit 14 in its discharge position 26. The user can now apply a downward pressure on the discharge unit 14, thereby causing the plunger 36 to undergo movement relative to the support member 34. As the plunger 36 is caused to move relative to the support member 34 the dimensions of the compression compartment will be reduced, thus resulting in the discharge unit applying a compressive force to the

absorbent body 30. As a result of the compressive force being applied thereon the absorbent body 30 will be caused to dispense the disinfectant which it had absorbed when it was located inside the soak position 22 of the container 12. In Figure 5 the discharge unit 14 has been located in its compression position 40 where the plunger 36 has undergone its maximum movement relative to the support member 34 and the absorbent body 30 has undergone a sufficient amount of compression to dispense most of the disinfectant previously absorbed. The dispensed disinfectant will fall under the influence of gravity towards the base 20 of the container for future use. In this regard it is pointed out that the support member 34 includes a latticework structure 42 configured as shown to facilitate return of the dispensed disinfectant to the container 12. When it is again required to disinfect the absorbent body 30 the above procedure can simply be repeated.

Figures 6(a), 6(b) and 6(c) show the inner container body 16 removed from the outer container body 18. The outer container body 18 in turn is depicted in Figures 7(a) and 7(b). An important feature of the inner and outer container bodies 16 and 18 is that they cooperate with one another to provide that the container 12 includes a venting formation, generally indicated in with the reference numeral 44 in Figure 2 and Figure 3. The purpose of the venting formation 44 is to allow air which is released by the absorbent body when it is caused to dispense its disinfectant, to vent to the atmosphere.

In this exemplary embodiment of the invention the venting formation 44 is formed by firstly providing a number of holes 46 in the base 20 of the inner container body 16. The venting formation 44 also includes that a number of protuberances 48 be provided towards upper edges 50 of the outer surface 52 of the outer container body 18. Finally the outer surfaces 54 of the inner container body 16 define an outlet patch 56 for providing fluid communication between the holes 46 in the base 20 and the protuberances 48 of the outer container body 18.

Referring to Figure 5 of the drawings it is pointed out that the latticework structure 42 of the support member 34 is provided with a number of lugs 58, in this embodiment there are four lugs, which are disposed about the perimeter of the support member as shown. Each lug 58, in turn, has a hole 60 through which a

leg 62 of the plunger 36 can slidably move. In this regard it is pointed out that the discharge unit 14 will be caused to move from its release position 38, shown in Figure 4, to its compression position 40 when the legs 62 of the plunger 36 are caused to slide through the their corresponding holes 60 of the support member lugs 58. This of course will occur in the event of a user applying a downward force on the discharge unit 14 as discussed above.

It is pointed out that the plunger 36 comprises first and second plunger members which are detachably connectable. The first and second plunger members are respectively shown in Figures 8(a) and 8(b) and Figures 9(a) and 9(b) and indicated with the reference numerals 64 and 66.

The first plunger member 64 includes a handle formation 68 which a user can grip when it is firstly required to cause the compression compartment 28 to be moved between the soak position 22 and the discharge position 26 of the container 12, shown in Figure 2. Secondly, the user can grip the handle formation 68 when it is required to cause the discharge unit 14 to move between its release position 38, shown in Figure 4, and its discharge position 26, shown in Figure 5.

Referring to Figures 9(a) and 9(b) it is pointed out that the legs 62 of the discharge unit 14 are connected to the second plunger member 66 and extend outwardly thereform. In the illustrated embodiment the legs 62 of the plunger 36 will be provided with stops 70, shown in Figure 2 of the drawings, to prevent the lugs 58 of the support member 34 becoming separated from their corresponding plunger legs 62.

It is envisaged that the steriliser unit of the invention will be produced from a plastics material, but it would be readily appreciated that a range of materials could be used in constructing a steriliser unit in accordance with the teaching of the present invention.

Although specific mention has been made to the use of the steriliser unit for sterilising a sponge, it would also be appreciated that the steriliser could be used for sterilising a range of absorbent articles.

A steriliser unit in accordance with the above description provides a useful apparatus which can be used to ensure that harmful bacteria and fungi which may inhibit an absorbent article, such as a sponge, are destroyed prior to being used for cleaning a specific surface.

5

The Claims Defining the Invention are as Follows:

1. A steriliser unit for sterilising an absorbent body comprising:

   - a container for holding a disinfectant, the container providing a soak position and a discharge position; and

   - a discharge unit for cooperation with the container, the discharge unit defining a compression compartment in which the absorbent body can be held, the discharge unit further being movable between a release position in which the absorbent body can be located within the compression compartment and a compression position in which the discharge unit will apply a compressive force on the absorbent body inside the compression compartment;

   wherein the compression compartment can be located within the soak position of the container when the discharge unit is located in its release position, thereby allowing the absorbent body to absorb an amount of disinfectant, and further wherein the discharge unit can be moved to its compression position when the compression compartment is located in the discharge position of the container, such that the absorbent body is allowed to dispense the disinfectant which it had absorbed when it was located inside the soak position of the container.

2. A steriliser unit according to claim 1 wherein the container includes a venting formation for in use allowing air, which is released by the absorbent body as it is caused to dispense its disinfectant, to vent to the atmosphere.

3. A steriliser unit according to claim 2 wherein the container comprises an outer container body and an inner container body which are detachably connectable.

4. A steriliser unit according to claim 3 wherein the inner container body has a base which provides the soak position.

5. A steriliser unit according to claim 4 wherein the inner container body includes support edges which are raised above its base in order to provide the discharge position.

6. A steriliser unit according to claim 5 wherein the venting formation of the container is formed by a number of holes in the base of the inner container body and a number of protuberances located towards upper edges of the outer surface of the outer container body, and wherein outer surfaces of the inner container body define an outlet path for providing fluid communication between the holes in the base and the protuberances of the outer container body.

7. A steriliser unit according to any one of the preceding claims wherein the discharge unit comprises a support member on which the absorbent body can be placed and a plunger which is movably connectable to the support member.

8. A steriliser unit according to claim 7 wherein the compression compartment of the discharge unit is provided by an area between the support member and the plunger.

9. A steriliser unit according to either claim 7 or claim 8 wherein the plunger includes a number of legs.

10. A steriliser unit according to claim 9 wherein the support member includes a latticework structure having a number of lugs.

11. A steriliser unit according to claim 10 wherein each lug has a hole through which a leg of the plunger can slidably move.

12. A steriliser unit according to claim 11 wherein the discharge unit is configured to move from its release position to its compression position when the legs of the plunger are caused to slide through corresponding holes of the support member lugs.

13. A steriliser unit according to claim 12 wherein the plunger comprises a first and a second plunger member which are detachably connectable.

14. A steriliser unit according to claim 13 wherein the first plunger member includes a handle formation whereby a user can firstly cause the compression compartment to be moved between the soak position and the discharge position of the container and secondly cause the discharge unit to move between its release position and compression position.

15. A steriliser unit according to either claim 13 or claim 14 wherein the legs are connected to the second plunger member and extend outwardly therefrom.

16. A steriliser unit according to claim 15 wherein the legs of the plunger are provided with stops to prevent the lugs of the support member becoming separated from their corresponding plunger legs.

17. A steriliser unit substantially as herein described with reference to the illustrated embodiment.