PORTABLE STERILIZING UNIT
Application February 27, 1941, Serial No. 386,886

8 Claims. (Cl. 250—91)

This invention relates to sterilizing apparatus and more particularly to a portable sterilizing unit for use in sterilizing rooms, such as bathrooms, or the like.

An object of the invention is to provide a convenient, simple and effective apparatus of the type above indicated.

Another object is to provide a portable apparatus of the above type which may be readily moved from room to room as in the case of hotels where a large number of bathrooms are to be sterilized.

Another object is to provide an apparatus of the above type having novel and improved details of construction and features of operation.

Various other objects and advantages will be apparent as the nature of the invention is more fully disclosed.

Although the novel features which are believed to be characteristic of this invention are more particularly pointed out in the claims appended hereto, the invention itself may be better understood by referring to the following description, taken in connection with the accompanying drawings in which a specific embodiment thereof has been set forth for purposes of illustration.

In the drawing:
Fig. 1 is a top plan view of a portable sterilizing apparatus embodying the present invention;
Fig. 2 is a side elevation thereof;
Fig. 3 is an end elevation of the sterilizing apparatus; and
Fig. 4 is a sectional detail taken along the line 4—4 of Fig. 2.

In the following description and in the claims certain specific terms are used for convenience in referring to various details of the invention. These terms, however, are to be given as broad an interpretation as the state of the art will permit.

Referring to the drawing more in detail, the invention is shown as applied to a sterilizing unit comprising a portable carriage 10 having top, sides and end plates 11, 12 and 13 respectively and mounted upon legs 14 carrying wheels or casters 15 which facilitate the movement of the unit from place to place.

In the embodiment shown, two of the wheels or casters are mounted for rotation about a fixed axis while the other two wheels or casters are mounted for rotation about a variable axis to facilitate the handling of the unit and the steering thereof as it is moved from place to place.

A pair of hand rails 16 provide a convenient grip for the operator. In the embodiment shown, these hand rails are formed as a part of opposite legs 14. It is to be understood, however, that the hand rails may be made of any suitable construction or shape and that a specific form has been shown merely for purposes of illustration.

A vertical cylinder 20 having a reflecting surface is mounted on the top plate 11. This cylinder may be made of glass, plastic, anodized aluminum or other suitable reflecting means or may be coated with such a reflecting means.

A plurality of spaced vertical tubes 21 suited to generate and radiate germicidal rays in the ultraviolet band are spaced around the periphery of the cylinder 20. The tubes 21 are shown as mounted between upper and lower contact clips 22 and 23 respectively which may be of any standard type. In the embodiment shown, four such tubes are spaced around the periphery of the cylinder 20. It is to be understood, however, that the number of tubes may be varied as desired, the essential consideration being to use a number of tubes suited to distribute and radiate germicidal rays to the various parts of the room.

The cylinder 20 is secured in place by vertical rods 25 which are spaced around the periphery of the cylinder and extend from a cover plate 26 of the cylinder to the top plate 11 of the carriage. The rods 25 are so spaced as to afford protection to the tubes 21 and to shield said tubes from accidental contact with an external object.

The top plate 11 of the carriage 10 may be provided with one or more apertures 27 registering with the cylinder 20. The cover plate 26 may also be provided with one or more apertures 28 disposed to register with said cylinder so as to permit escape of the rising current of hot air which may be present in said cylinder. A pair of baffle plates 29 and 31 are mounted above the apertures 28 of the cover plate 26 to shield the same. The baffle plate 30 may be provided with a set of apertures 32 to facilitate escape of the hot air received from the interior of the cylinder 20. The baffle plates 29 and 31 are spaced apart and above the cover plate 26 to provide air passages therebetween.

In the embodiment shown the carriage 10 is provided with a semi-cylindrical bottom plate 35 which is also made of a reflecting material similar to the cylinder 20 or is coated with such material. Disposed about the periphery of this bottom plate and extending axially thereof are a plurality of tubes 36 similar to the tubes 21 above mentioned. These tubes 36 are mounted between standard brackets 37 secured to the bot-
tom plate 35 and are arranged to distribute and radiate the germicidal rays over a vertical arc of at least 180° to sterilize the portion of the floor which is shielded by the carriage from the rays from the tubes 21. While four such tubes 36 may be shown for purposes of illustration, it is to be understood that the number of tubes may be varied as desired.

The carriage 10 may contain suitable transformers or other electrical control units and suitable leads for connecting with the various tubes 21 and 36 so as to supply electric current thereto and may be connected to an external outlet by a flexible cable 40. A suitable timing device indicated as a timer 41 may be included in the electrical circuit and mounted on the end plate 13 of the carriage 10. The timing device is preferably connected to cut off the current after a predetermined time interval.

The carriage is further provided with side bumpers comprising rods 45, covered by a soft material, such as rubber 46, said rods being mounted on the side plates 12 by suitable means shown as brackets 47 and extending between opposite legs 14 so as to prevent the unit from injuring any furniture with which it may come in contact. It is to be understood that such bumper means may be extended around the entire periphery of the unit if desired.

In the operation of this device, the carriage 10 is moved into the room to be sterilized and positioned preferably at the center of such room. The timer 41 is set for the period of time required to sterilize the surfaces of the room and the carriage is turned on, thereby energizing all of the tubes 21 and 36. The tubes 21 are so arranged as to radiate germicidal rays around the entire 360° of the wall surface of the room and accordingly cover the entire vertical wall area, in addition to radiating such waves to the ceiling and floor. The tubes 36 are arranged primarily to radiate the germicidal rays to the floor of the room and, by reason of the reflecting surface 35, cover substantially the entire floor area, particularly the area beneath the unit which is shielded from the rays from the tubes 21 by the carriage itself.

It has been found in tests that the arrangement above shown effects a complete coverage of the exposed wall, floor and ceiling areas of the room, and in the case of bathrooms covers exposed toilet seats or the like which are to be sterilized. The unit is particularly adapted for hotel use and has been found to quickly and effectively sterilize the rooms in which it has been used.

It is to be understood, however, that it is not in any way restricted to use in hotels or in bathrooms and that such use has been set forth merely for purposes of illustration. The unit may be used in any room where sterilizing effect is required and may be applied to creameries, food factories, kitchens, hospital rooms or the like. It is also to be understood that the invention is not to be restricted to the particular arrangement of sterilizing tubes set forth, although the embodiment shown has been found to be particularly suitable for the use intended.

The cylinder 20 and tubes 21 may, of course, be made of any suitable length or the tubes may extend beyond the cylinder, if desired, or the cylinder and tubes may be tilted from the vertical to facilitate coverage of certain areas. If the proper current is available for the unit so that large rectifiers, transformers or the like are not required, the size of the carriage may be greatly reduced to increase the coverage obtained from the unit. In such instances, the bottom units may be omitted if the upper unit is so mounted that shadows are eliminated.

Although a specific embodiment of the invention has been shown forthwith for purposes of illustration, it is to be understood that the invention is not to be limited thereto, but that various changes and modifications may be made therein as will be readily apparent to a person skilled in the art. The invention is only to be limited in accordance with the scope of the following claims.

What is claimed is:

1. A portable sterilizing unit for rooms comprising a carriage mounted for movement from place to place, a source of sterilizing rays mounted vertically on the top of said carriage in a position to radiate said rays horizontally around the entire 360° wall area of a room and a source of sterilizing rays mounted on the bottom of said carriage to radiate said rays to the floor area which is shielded by the body of the carriage from the rays from said first source.

2. A portable sterilizing unit for rooms comprising a carriage mounted for movement from place to place, a vertical cylinder mounted on said carriage and having a reflecting surface for sterilizing rays, a plurality of vertical elongated sources of sterilizing rays disposed about the periphery of said cylinder whereby the entire 360° wall area of said room is irradiated, and a source of sterilizing rays mounted on the bottom of said carriage to radiate said rays to the floor area which is shielded by the body of said carriage from the rays of said first source.

3. A portable sterilizing unit for rooms comprising a carriage mounted for movement from place to place, a vertical cylinder mounted on said carriage and having a reflecting surface for sterilizing rays, a plurality of vertical elongated sources of sterilizing rays disposed about the periphery of said cylinder whereby the entire 360° wall area of said room is irradiated, and a source of sterilizing rays mounted on the bottom of said carriage to radiate said rays to the floor area which is shielded by the body of said carriage from the rays of said first source.

4. A portable sterilizing unit for rooms comprising a carriage mounted for movement from place to place, a vertical cylinder mounted on said carriage and having a reflecting surface for sterilizing rays, a plurality of vertical elongated sources of sterilizing rays disposed about the periphery of said cylinder and suited to radiate said rays about the entire 360° wall area of said room, said carriage having a semi-cylindrical bottom plate provided with a reflecting surface for sterilizing rays and a plurality of elongated sources of sterilizing rays disposed about the periphery of said bottom plate and extending axially thereof to radiate sterilizing rays over a substantial vertical arc and beneath said carriage to thereby cover at least the entire area which is shielded by the body of said carriage from the rays of said first sources.

5. A portable sterilizing unit for rooms comprising a carriage mounted for movement from place to place, a vertical cylinder mounted on said carriage and having a reflecting surface for sterilizing rays, a plurality of vertical elongated sources of sterilizing rays disposed about the periphery of said cylinder and suited to radiate said rays about the entire 360° wall area of said room, and a plurality of vertical rods disposed about the periphery of said cylinder and securing the same to said carriage, said rods being spaced to shield said sources from contact with an external object.

6. A portable sterilizing unit for rooms com-
prising a carriage mounted for movement from place to place, a vertical cylinder mounted on said carriage and having a reflecting surface for sterilizing rays, a plurality of vertical elongated sources of sterilizing rays disposed about the periphery of said cylinder, said carriage being provided with an aperture communicating with said cylinder, a cover plate for said cylinder said cover plate having an aperture communicating with said cylinder, and baffle means disposed in said last aperture to permit the escape of hot air from the interior of said cylinder and said carriage.

7. A portable sterilizing unit for rooms comprising a carriage mounted for movement from place to place, a vertical cylinder mounted on said carriage and having a reflecting surface for sterilizing rays, a plurality of vertical elongated sources of sterilizing rays disposed about the periphery of said cylinder and suited to radiate said rays about the entire 360° wall area of said room, said carriage having a semi-cylindrical bottom plate provided with a reflecting surface for sterilizing rays, a plurality of elongated sources of sterilizing rays disposed about the periphery of said bottom plate and extending axially thereof to radiate sterilizing rays over a substantial vertical arc and beneath the body of said carriage to thereby cover at least the entire area which is shielded by said carriage body from the rays of said first sources, a plurality of vertical rods disposed about the periphery of said cylinder and securing the same to the body of said carriage, said rods being spaced to shield said sources from contact with an external object, said carriage being provided with an aperture communicating with said cylinder, a cover plate for said cylinder said cover plate having an aperture communicating with said cylinder, and baffle means disposed over said last aperture to permit the escape of hot air from the interior of said cylinder and said carriage.

8. A portable sterilizing unit for rooms comprising a carriage mounted for movement from place to place, a vertical cylinder mounted on said carriage and having a reflecting surface for sterilizing rays, a plurality of vertical elongated sources of sterilizing rays disposed about the periphery of said cylinder and suited to radiate said rays about the entire 360° wall area of said room, said carriage having a semi-cylindrical bottom plate provided with a reflecting surface for sterilizing rays, a plurality of elongated sources of sterilizing rays disposed about the periphery of said cylinder and extending axially thereof to radiate sterilizing rays over a substantial vertical arc and beneath the body of said carriage to thereby cover at least the entire area which is shielded by said carriage body from the rays of said first sources, a plurality of vertical rods disposed about the periphery of said cylinder and securing the same to said carriage body, said rods being spaced to shield said sources from contact with an external object, said carriage body being provided with an aperture communicating with said cylinder, a cover plate for said cylinder having an aperture communicating with said cylinder, baffle means disposed over said last aperture to permit the escape of hot air from the interior of said cylinder and said carriage, and timing means on said carriage connected to deenergize said sources after a predetermined time interval.

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