

May 16, 1939.

G. HETTINGER

2,158,698

STERILIZER

Filed July 23, 1936

Fig. 1.

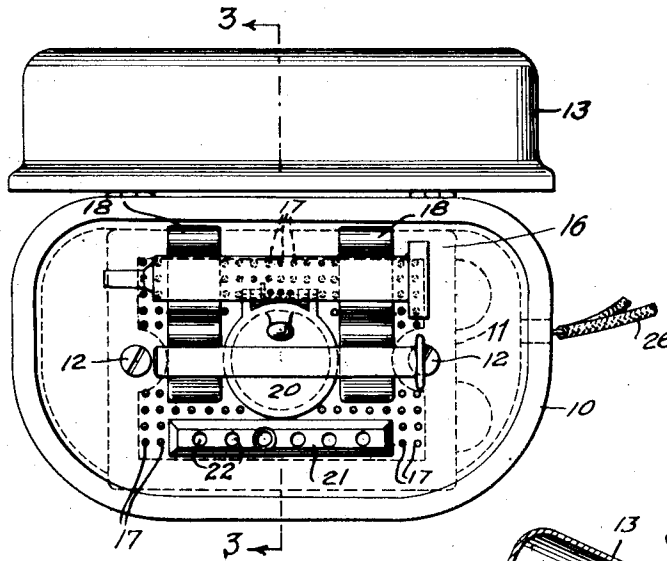


Fig. 2.

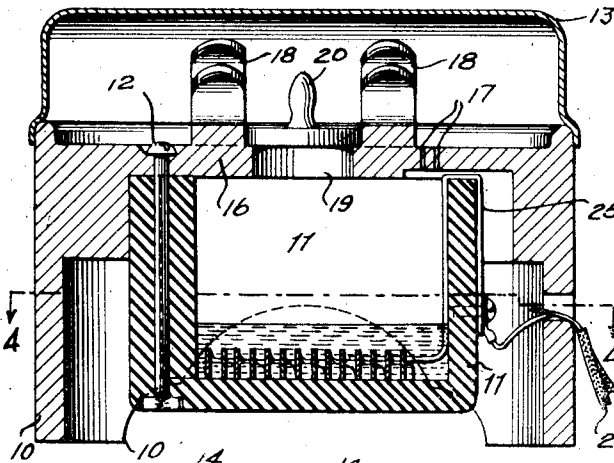


Fig. 3.

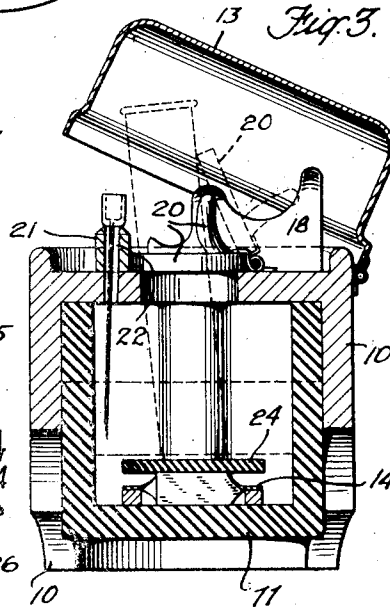
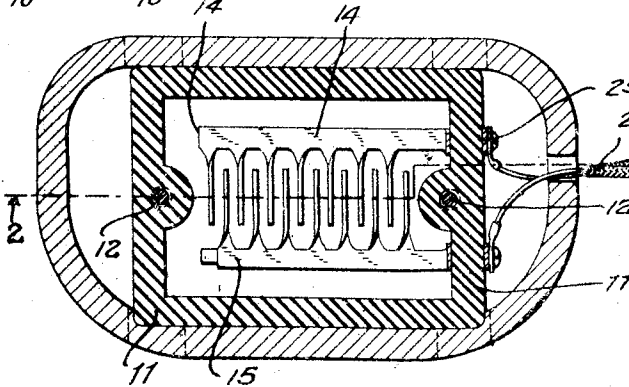


Fig. 4.



INVENTOR
GEORGE HETTINGER
George Hettinger
ATTORNEYS

UNITED STATES PATENT OFFICE

2,158,698

STERILIZER

George Hettinger, East Rutherford, N. J., assignor, by mesne assignments, to American Sundries Co., Inc., Brooklyn, N. Y., a corporation of New York

Application July 23, 1936, Serial No. 92,069

2 Claims. (Cl. 219—40)

This application relates to an electric heater and particularly to a heater of the type adapted to effect heating of an object by passage of an alternating current through water or other suitable liquid which serves also as a heat exchange medium to convey the heat to said object. In a prior application, I have described and claimed a sterilizer in which a body of water or other suitable sterilizing liquid is heated by the direct passage therethrough of a current by means of electrodes submerged in the liquid. This type of sterilizer has gone into wide commercial use and has proven very popular. Such a sterilizer, however, fails to meet completely the demands of every use to which a sterilizer of this type might otherwise be put. In particular in spite of the rapid effect of the direct heating of the water by passing of current therethrough there is a substantial time delay during which the body of water is being heated up to a sterilizing temperature.

An object of the present invention is to avoid such limitations and to provide a simple inexpensive and readily portable device, which is suitable for or may be readily adapted to requirements of special sterilizing uses.

Another object of my invention is to provide a sterilizer so simple, so compact and so light in its construction that it can readily be carried about in a bag or in an overcoat pocket by a doctor or by a patient, e. g., a diabetic who is required to resort frequently to the use of hypodermics or other instruments requiring sterilization.

Another object of my invention is to provide a sterilizer so rapid in its operation that instruments may be fully sterilized during the time necessary to prepare the patient for their use, e. g., in a very few minutes, and in which sterile parts such as the points of hypodermic needles may remain in a sterile chamber while parts which are to be handled are allowed to cool.

In the accompanying drawing I have shown a sterilizer embodying my invention. This has been chosen with a view to illustrating the invention and instructing others in the principles thereof and in the best manner of embodying the same, and it should be understood, of course, that this is not intended to be exhaustive or limiting of the invention, but on the contrary it is my intention by this specification to make the invention so clear that others may easily adapt it to the particular requirements of special application in various forms which may be best suited to each particular application.

In Fig. 1, I have shown in plan view a sterilizer embodying my invention with the instruments in position for sterilization and with the cover thrown back to expose the instruments.

In Fig. 2, I have shown the same sterilizer in longitudinal section taken on line 2—2 of Fig. 4.

In Fig. 3, I have shown a transverse section taken on line 3—3 of Fig. 1, but with the cover swung to a more nearly closed position.

In Fig. 4, I have shown the same device in horizontal section taken on line 4—4 of Fig. 2.

Referring to Figs. 1 to 4 inclusive, I have shown there a sterilizer which consists of a base or supporting member 10, a receptacle 11 secured thereto by means of screws 12, a cover 13 hinged to the base and electrodes 14 and 15 mounted at the bottom of the receptacle 11.

The upper portion of the base member 10 above the receptacle 11 forms a shelf 16 perforated as shown at 17 to permit the passage of steam into the space between the shelf 16 and the cover 13 and the return of condensate from that space into the receptacle 11. A rack 18 is preferably provided for holding the instruments to be sterilized, and an opening 19 provided with a spring hinged cover 20, serves as a dual purpose opening for filling the desired amount of water or other liquid into the receptacle and/or holding an article upright partly within the receptacle and partly in the space thereabove, e. g., a test tube in which urine specimens are to be heated for testing as illustrated, for example, by broken lines in Fig. 3.

The sterilizer shown in these figures is designed particularly for the sterilization of hypodermic syringes. The rack 18, therefore, is provided with two depressions in which the tube and the piston of the syringe are held respectively as shown, for example, in Fig. 1 and in front of the rack 18 a raised portion 21 is provided with a series of holes 22 through which the hypodermic needles may be inserted and in which they fit sufficiently loosely to permit the circulation of steam around the entire circumference of the needle, but at the same time sufficiently close so that the needles are directed away from the electrode and are prevented from coming in contact therewith. This is of particular importance where the electrodes are otherwise exposed within the container. However, when the sterilizer is designed so that instruments can be inserted through the opening 19, it is preferable to provide an insulator baffle, e. g., as shown in Fig. 3 at 24, which will prevent any instrument inserted from

above from coming into direct contact with the electrodes.

The electrodes in this preferred embodiment are made of chemically resistant metal, e. g., nichrome or pure nickel, and are preferably given the form shown in the drawing, in which a plurality of closely spaced fingers are provided on each electrode and alternate with one another so as to provide a plurality of short parallel paths for passage of the current through the water.

In order to avoid the necessity for sealing electrical connections through the receptacle, each electrode strip is carried up over the top of the receptacle at one end, e. g., as shown at 25 in Fig. 2, and is connected at its outer end with the flexible conductor 26.

In the use of this device a small amount of water is filled into the receptacle 11 preferably just about sufficient to cover the electrodes 14 and 15. The articles to be sterilized are placed on the racks 18 and 21, the cover 13 is closed and the flexible conductor 26 connected to an ordinary alternating current supply. The water in the bottom of the receptacle 11 begins to boil almost immediately and the steam passes up through the perforations 17 and 22 into the space beneath the cover 13, thereby heating thoroughly everything within this space and consequently sterilizing the articles which are held on the rack 18 and 21. As soon as sterilization is complete, the articles can be taken out and used, the water may be emptied from the receptacle and the sterilizer tucked away in a bag or pocket with no special precautions.

Obviously, the constructional features of the sterilizer may be substantially varied. For example, I have shown the shelf 16 and the base 10 as integral while the receptacle 11 is made separately and secured to the base and shelf. Obviously all of these could be separate, or the receptacle and base could be integral with the shelf secured thereon. Similarly the particular form as chosen for all of these may be substantially varied and the device may be constructed of various materials. Taking into consideration the cost as well as technical requirements I prefer to use a ceramic material such as porcelain for the base 10, the shelf 16 and the receptacle 11; but my invention is in no way limited to these materials, and, for example, the receptacle 11 may be made of conductive material so that it serves as one of the electrodes with the other electrodes and its connections secured thereto by an insulating material and spaced from the bottom of the receptacle so as to leave a path for

passage of the alternating current between the bottom of the receptacle and the separate electrode through the water.

The sterilizer may be constructed of various materials, as, for example, ceramic materials such as porcelain, already mentioned, infusible molded resinous compositions such as Bakelite, or even metal, provided that suitable insulation is provided to protect the user against shock and the electrodes against short circuiting.

I have shown electrodes in a form particularly adapted for the use of metal as the electrode material, but, of course, graphite or other water resistant conducting materials may be used.

The cover 13 is preferably made of non-corrodable metal, such as stainless steel or brass or any metal plated with a suitable non-corrodable metal, such as nickel, chromium, silver, etc.

I claim:

1. A sterilizer comprising a base, a receptacle adapted to hold a pool of water, electrodes positioned to be at least partly immersed in said pool of water, a perforated tray at the top of the receptacle adapted to support articles to be sterilized and having a plurality of holes adapted to receive syringe needles and to direct them into a part of the receptacle away from said electrodes and the portion of the tray around the perforations being above said receptacle, whereby the needles are held with the ends thereof which are to be handled exposed for rapid cooling and their points within the receptacle protected from contamination, and a hollow cover fitting over the tray and the articles to be sterilized adapted to trap steam produced in the receptacle.

2. A sterilizer comprising a base, a receptacle adapted to hold a pool of water, electrodes positioned so as to be at least partially immersed in said pool of water, a perforated tray at the top of the receptacle adapted to support articles to be sterilized and having an opening for insertion into said receptacle of an object to be heated, a guard over the electrodes within the receptacle adapted to prevent any rigid object inserted through said opening from contacting the electrodes and the portion of the tray around the perforations being above said receptacle, whereby the needles may be held with the ends thereof which are to be handled exposed for rapid cooling and their points within the receptacle protected from contamination, and a hollow cover fitting over the tray and the articles to be sterilized adapted to trap steam produced in the receptacle.

GEORGE HETTINGER.