Aug. 24, 1943. L. A. HEINTZELMAN 2,327,707

STERILIZER

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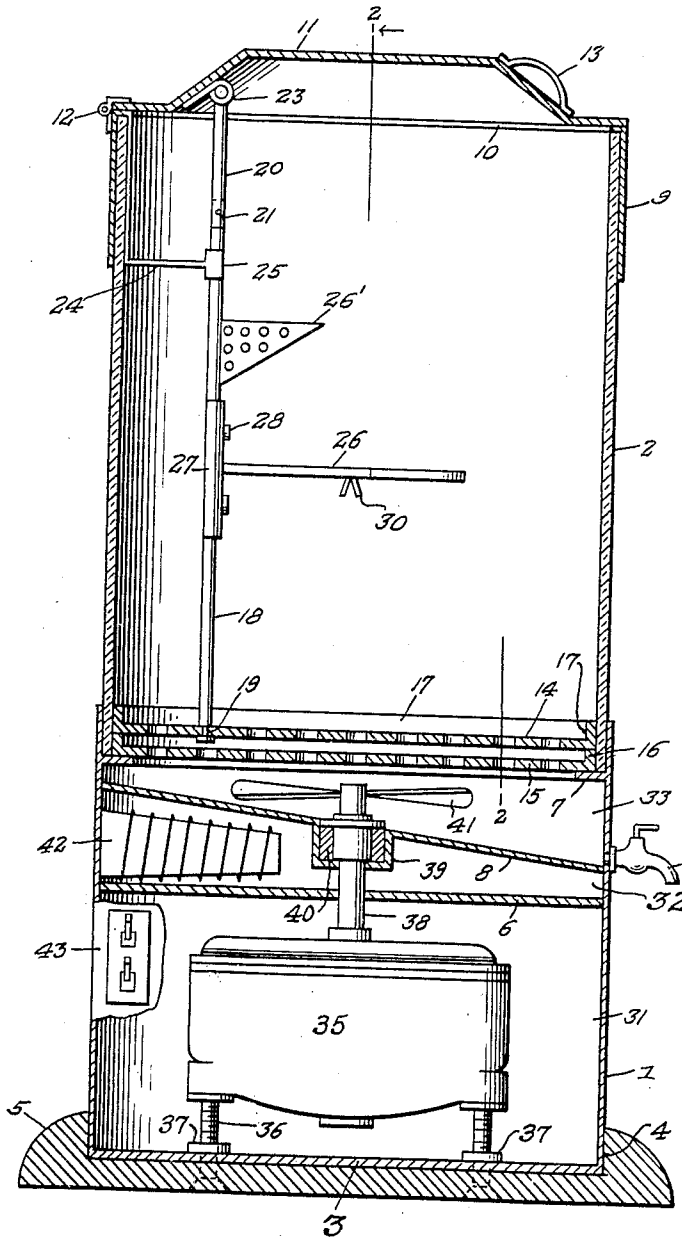


Fig. 1.

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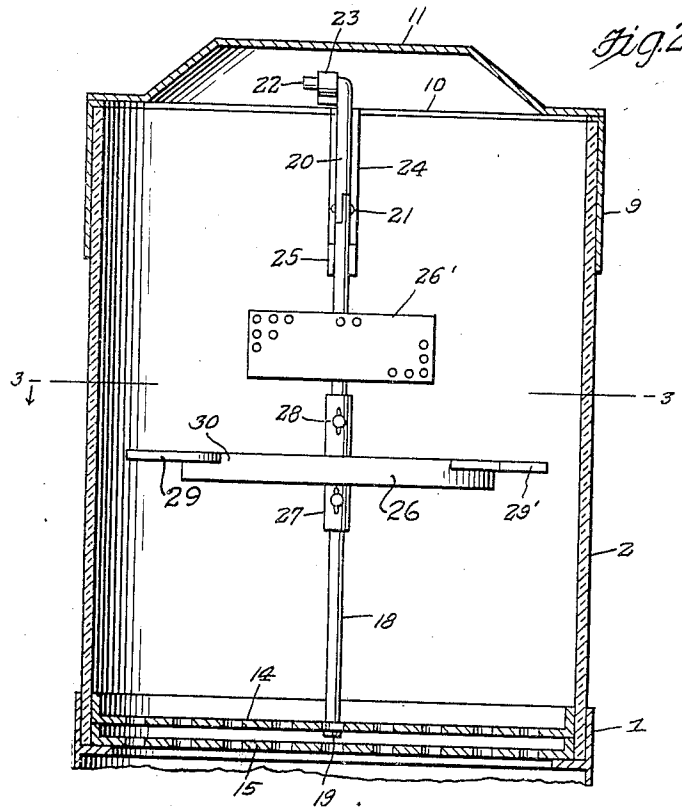
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Fig. 2.



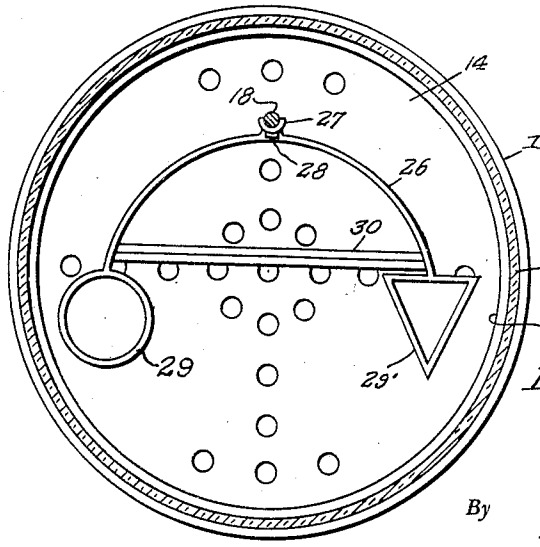


Fig. 3.

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STERILIZER

Leo A. Heintzelman, Grand Rapids, Mich.

Application December 22, 1942, Serial No. 469,829

4 Claims. (Cl. 21—91)

My invention relates to improvements in sterilizers for use more particularly in sterilizing dental and surgical instruments, although, as will presently appear, it is equally well adapted for sterilizing other classes and various other types of implements.

The principal object of my invention is to provide an efficient, simply constructed device for sterilizing such instruments by immersion in hot water and chemicals under constant agitation, and which is economical to operate, requires a minimum of servicing, provides for maximum convenience as regards placing instruments therein and removing the same therefrom, and for maximum capacity as regards the number of instruments which may be sterilized, while at the same time being comparatively inexpensive to manufacture.

Other and subordinate objects are also comprehended by my invention, all of which, together with the precise nature of my improvements and advantages thereof, will be readily understood when the succeeding description and claims are read with reference to the drawings accompanying and forming part of this specification.

In said drawings:

Figure 1 is a view in vertical central section of my improved sterilizer,

Figure 2 is a fragmentary similar section taken on the line 2—2 of Figure 1, and

Figure 3 is a view in transverse section taken on the line 3—3 of Figure 2.

Referring to the drawings by numerals, in the illustrated, preferred embodiment thereof, my improved sterilizer comprises an upright, cylindrical casing including a lower section 1 forming a mechanism housing, and an upper deeper section 2 forming a sterilizing chamber.

The lower section 1 includes a closed bottom 3 and is seated in a circular recess 4 in a suitable circular base 5. A diametrical, intermediate partition 6 is provided in the lower section 1, and an annular, internal, radial flange 7 spaced slightly below the upper end of said section. Between the partition 6 and the flange 7, an oblique transverse partition 8 extends across said section and inclines downwardly towards what constitutes the front side of the sterilizer. The lower section 1 may be formed of any suitable light, strong plastic, or metal, together with the base 5.

The upper section 2 fits, at its lower end, into the upper end of the lower section 1, seats on the flange 7, and is preferably formed of glass. A suitable liquid tight seal, not shown, may be provided between the lower end of the upper section 2 and the upper end of the lower section 1. A short cylindrical band 9, of suitable light metal, is slidably fitted on the upper end of the upper section 2, said band having an internal upper edge flange 10 adapted to seat on the upper edge of the upper section 2. The band 9 is removable from the upper section 2, as will be clear. A dome-type, preferably metal lid 11 is hinged, as at 12, to the band 9 at the rear side of the sterilizer and provided with a front hand grip 13. Fitted in the bottom of the upper section 2 is a pair of circular, upper and lower, foraminous plates 14 and 15 vertically spaced close together, the lower plate 15 seating on the flange 7 and having an annular lateral edge flange 16 supporting the plate 14 which is provided with a similar flange 17. Both plates 14, 15 are slidably fitted in the upper section 2 for a purpose presently seen, and the flanges 16, 17 form wide bearing surfaces to prevent the plates from binding in the section 2 during sliding of the same in said section.

In the rear portion of the upper section 2 is an upstanding lifter rod 18 having the lower end thereof suitably secured to the rear portion of the upper plate 14 rigidly, as at 19, and including a short upper section 20 pivoted at its lower end, as at 21, to a rearwardly breaking joint in the rod 18, the upper end of said section 20 being right angled, as at 22, and having a bearing in a loop 23 rigidly fixed in the lid 11, in any suitable manner, the arrangement being such that under opening of the lid 11, the rod 18 will be moved thereby upwardly to lift the top plate 14 in the upper section 2 a distance such that said plate may be readily reached by the hand through the top of the upper section 2. A right angled guide bracket 24 depends from the flange 10 in the upper end of the upper section 2 and extends forwardly immediately in the rear of the rod 18. The bracket 24 is provided with a grooved front end guide 25 straddling the rod 18 below the joint thereof, whereby said rod is braced against rearward bending under rearward pull thereon caused by breaking of the described joint therein.

Intermediate the guide bracket 24 and the upper plate 14, a forwardly curved, bar-like, resilient support 26 extends transversely across the lifter rod 18 and is detachably attached thereto by a vertical base rod 27 and screws 28 extending from opposite ends of said bar and into said rod. The front ends of the support 26 are formed into circular and rectangular loops 29 and 29' adapted to receive scissors or the like

inserted downwardly therein. Behind the loops 29, 29' other instruments, as at 30, may be clamped in the support by spreading the ends thereof apart to grip such instruments therebetween.

Above the support 26 a foraminous, elongated container 26' of trough-like form, and any suitable material, extends transversely across the rod 18 and is suitably secured thereto for containing other instruments. Still other instruments, as will be understood, may be deposited on the upper plate 14. Returning now to the bottom section 1, the partition 6 forms therein a lower motor chamber 31, the partitions 6 and 8 a heater chamber 32 therein, and the partition 8 and lower plate 15 an agitator chamber 33 with an apertured top and a downwardly and forwardly sloping bottom. A front drain cock 34 is provided in the section 1 at the low point of the chamber 33.

A motor 35 is centered in the chamber 31 on leveling screw bolts 36 extending upwardly through the base 5 and the bottom of the lower section 1 with jamb nuts thereon, as at 37. The armature shaft 38 of the motor 35 extends upwardly through the partition 6, axially of the lower section 1 and through a socket 39 in the partition 8 and a bushing 40 in said socket to terminate in the agitating chamber 33. A suitable bladed agitator 41, of the propeller type, is fixed on the shaft 38 in said chamber 33 with blades pitched to act upwardly against liquid in said chamber.

An electric heating coil 42 extends forwardly from the rear side of the lower section 1 into the heating chamber 37. The motor 35 and coil 42 may be connected, in any suitable manner, in a house circuit, not shown, or other source of electrical energy. A motor and coil control switch box 43 is provided on the outside of the lower section 1 to be suitably connected in said circuit.

Referring now to the use and operation of the described invention, the agitator chamber 33 and upper section 2 are filled with water to substantially the upper end of said section 2 with any suitable sterilizing chemical of commerce deposited in the water, the sterilizing chamber being, of course first loaded with instruments in a manner which will be clear from the foregoing description. The water and chemicals may be heated through the medium of the heater 42 in a manner which will be clear. Operation of the motor 35 causes the agitator 41 to maintain the water and chemicals constantly agitated so as to create currents therein effecting a washing action on the instruments within the sterilizing chamber. After the instruments have been immersed for a sufficient period of time, the lid 11 may be opened to elevate the container 26', support 26 and bottom plate 14 so that instruments supported by those elements may be readily reached through the upper end of the upper section 2, it being understood that, preferably, in this operation, the sterilizer be drained by way of the drain cock 34. For cleaning purposes, the band 9 may be lifted off the upper section 2, together with the lid 11, rod 18, bracket 24, container 26', support 26 and upper plate 14 so that the parts enumerated may be removed. After the designated parts are removed, the lower plate 15 may be slid upwardly out of the upper section 2 by means of any suitable instrument and also removed for cleaning purposes.

The foregoing will, it is believed, suffice to impart a clear understanding of my invention without further explanation.

Manifestly, the invention, as described, is susceptible of modification as regards structure and relation of parts without departing from the inventive concept, and right is herein reserved to such modifications as fall within the scope of the appended claims.

Having described the invention, what is claimed as new is:

1. In a sterilizer for surgical instruments and the like, a container, means dividing the container transversely into motor, heater, agitator and sterilizing chambers, respectively, arranged one above the other in the order named, the agitator chamber having a perforated top establishing communication between said agitator chamber and the sterilizing chamber, and said agitator chamber and sterilizing chamber being adapted to contain sterilizing fluid, a motor in said motor chamber, an agitator in said agitator chamber to which the motor is operatively connected, an upwardly opening hinged lid for the top of the sterilizing chamber, and instrument supporting means in said sterilizing chamber, connected to said lid for lifting in a straight line under opening of said lid.

2. In a sterilizer for surgical instruments and the like, a container, means dividing the container transversely into motor, heater, agitator and sterilizing chambers, respectively, arranged one above the other in the order named, the agitator chamber having a perforated top establishing communication between said agitator chamber and the sterilizing chamber, and said agitator chamber and sterilizing chamber being adapted to contain sterilizing fluid, a motor in said motor chamber, an agitator in said agitator chamber to which the motor is operatively connected, an upwardly opening hinged lid for the top of the sterilizer chamber, instrument supporting means in said sterilizing chamber, connected to said lid for lifting in a straight line under opening of said lid, said supporting means comprising a lifter rod, including a joint forming section fixed to said lid, a perforated plate fixed to the rod and vertically slidable in said sterilizing chamber, and means to guide said rod.

3. In a sterilizer for surgical instruments and the like, a container, means dividing the container transversely into motor, heater, agitator and sterilizing chambers, respectively, arranged one above the other in the order named, the agitator chamber having a perforated top establishing communication between said agitator chamber and the sterilizing chamber, and said agitator chamber and sterilizing chamber being adapted to contain sterilizing fluid, a motor in said motor chamber, an agitator in said agitator chamber to which the motor is operatively connected, an upwardly opening hinged lid for the top of the sterilizing chamber, instrument supporting means in said sterilizing chamber, connected to said lid for lifting in a straight line under opening of said lid, said supporting means comprising a lifter rod depending from said lid and having a break joint therein, and racks fixed to said rod crosswise thereof.

4. In a sterilizer for surgical instruments and the like, a container, means dividing the container transversely into motor, heater, agitator and sterilizing chambers, respectively, arranged one above the other in the order named, the agitator chamber having a perforated top establishing communication between said agitator cham-

ber and the sterilizing chamber, and said agitator chamber and sterilizing chamber being adapted to contain sterilizing fluid, a motor in said motor chamber, an agitator in said agitator chamber to which the motor is operatively connected, an upwardly opening hinged lid for the top of the sterilizing chamber, instrument supporting means in said sterilizing chamber, connected to said lid for lifting in a straight line under opening of said lid, and an annular band to which the lid is hinged fitting over and seating on the upper end of said container for removal therefrom with said lid and supporting means to remove the lid and withdraw the supporting means from said sterilizing chamber.

LEO A. HEINTZELMAN.