

R. L. SPAULDING
STERILIZER.
APPLICATION FILED JUNE 13, 1911.

1,028,297.

Patented June 4, 1912.

Fig. 1

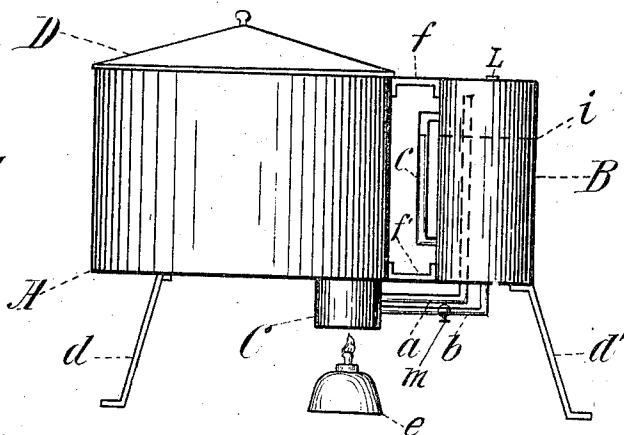


Fig. 2

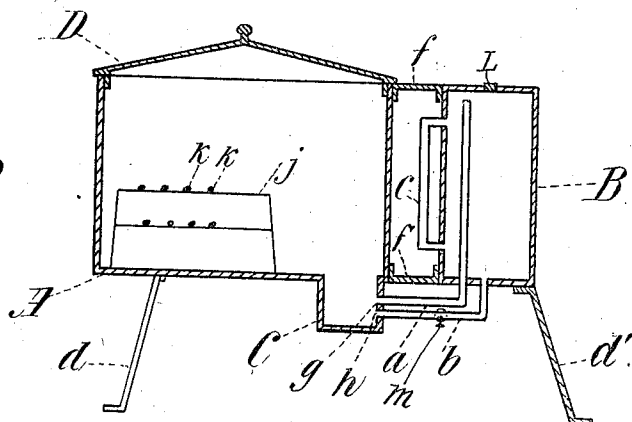
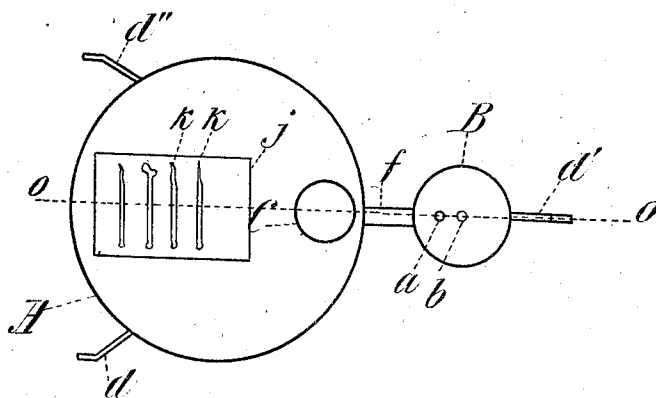


Fig. 3



Witnesses
S. P. Buck,
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Roy Lee Spaulding Inventor;
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UNITED STATES PATENT OFFICE.

ROY LEE SPAULDING, OF HELENA, MONTANA.

STERILIZER.

1,028,297.

Specification of Letters Patent.

Patented June 4, 1912.

Application filed June 13, 1911. Serial No. 632,876.

To all whom it may concern:

Be it known that I, ROY LEE SPAULDING, a citizen of the United States of America, and resident of Helena, in the county of Lewis and Clarke and State of Montana, have invented certain new and useful Improvements in Sterilizers, of which the following is a specification.

This invention relates to sterilizing apparatus and particularly to a sterilizer designed to operate through the use of steam or vapor adapted to circulate in a receptacle containing instruments, such as dental or surgical instruments which are to be sterilized.

A further object of this invention is to provide in a sterilizer, a receptacle for containing the vapor or steam and the instruments to be sterilized and a well having novel means for controlling the admission of liquid thereto in small quantities in order that rapid vaporization of the liquid may take place, the rapidity of vaporization being controlled by the heater here shown in the form of a lamp externally of the casing, thereby enabling an operator to vaporize the liquid rapidly if desired or by reducing the flame, the vaporization can be made more slowly.

A still further object of this invention is to provide a reservoir for the liquid in proximity to the sterilizing chamber and provide means of communication between the said reservoir and the well of the sterilizing chamber so that all of the apparatus except the heater is a unitary structure.

It is often desirable to disinfect a surgical or dental instrument very quickly; which may be done by dipping the same into boiling water, and it is therefore desirable to have a well of boiling water in the most convenient location. It is also desirable to provide the boiling well of such depth that the instrument may be dipped sufficiently deep without its edge or point contacting with the bottom of the well and becoming dulled thereby. With these latter objects in view I provide such a well adjacent to the periphery of the bottom of the sterilizing chamber; so that the same may be easily accessible without interfering with the sterilizing shelves or the instruments thereon; while, at the same time, the boiling well is performing a two-fold function.

With the foregoing and other objects in view, the invention consists in the details of

construction, and in the arrangement and combination of parts to be hereinafter more fully set forth and claimed.

In describing the invention in detail, reference will be had to the accompanying drawings forming part of this specification wherein like characters denote corresponding parts in the several views; and in which—

Figure 1 illustrates a view in elevation of the sterilizing apparatus; Fig. 2 illustrates a vertical sectional view thereof; and Fig. 3 illustrates a top plan view with the cover of the sterilizing chamber removed.

In these drawings A denotes the sterilizing chamber and B a reservoir for containing liquid preferably water.

C denotes the well which is formed by a depending portion of the bottom of the sterilizing chamber so that the said well is comparatively small in circumference and shallow as to depth. The wall of the well is provided with an upper pipe *a* and a lower pipe *b*, the former of which extends upwardly into the reservoir B and terminates at a point near the top thereof whereas the latter extends through the bottom of the reservoir and is under the pipe *a* in the well. The purpose of the two pipes is to control the flow of liquid from the reservoir to the well, the operation being such that the liquid in the reservoir flows through the pipe *b* so long as the pipe *a* is unsealed by the said liquid, but upon sealing of the said pipe *a*, air is prevented from gaining access to the reservoir and the flow is interrupted. The flow remains interrupted so long as the liquid seals the end of the pipe within the well but when the liquid in the well falls below the level of the pipe, air and steam enter the reservoir and the flow of liquid is resumed temporarily. In similar apparatus; wherein the air and steam pipe (such as the pipe *b* of this invention) passes upward through the outer air; instead of through the water, the heat, from the steam, in passing through the pipe, is absorbed by the outside air and is wasted; while the same heat, in this invention, is absorbed by the water in the reservoir B and is thereby conserved; resulting in a saving of fuel. The merger of the pipes *a* and *b* within the well is shown by the openings *g* and *h*. If the pipes *a* and *b* entered the well on the same level, they would be sealed alike by the water in the well; and, when the water

boiled vigorously, these pipes would each become sealed and unsealed in irregular succession. At times, therefore, steam would enter the reservoir through the pipe *b*, and on passing upward through the body of water would become condensed and therefore tend to cause a partial vacuum above the body of water, and when this tendency would be suddenly relieved by entrance of steam through the pipe *a*, a considerable quantity of water would be admitted into the well and thereby operate to reduce the temperature of the water to an undesirable degree. By placing the pipes *a* and *b* in the relative positions shown, these undesirable features are eliminated and an even flow and temperature of water is assured.

The sterilizing chamber has a cover *D* which is removable and the reservoir *B* may be provided with appropriate means for supplying liquid thereto, the said reservoir *B* being provided with a gage glass *c* from which the level of the liquid within the reservoir may be determined. The sterilizing chamber is provided with supporting legs *d* and *d''* and the reservoir is provided with a supporting leg *d'*. The sterilizing chamber and reservoir are connected by brackets *f* and *f'* so that the chamber and reservoir are rigidly connected, not only by the brackets but by the pipes *a* and *b*.

The heating agent is here shown as comprising a wick stove *e* which may be in the nature of an alcohol burner although the means for heating the liquid within the well is an immaterial detail.

The vaporization chamber contains a stand *j* having shelves of planes *k*, *k*, which support the instruments to be sterilized.

It is obvious that the reservoir *B* must be provided with an air tight cover so that the liquid can be supplied thereto from time to time but the particular form of cover is an immaterial detail of construction in this connection.

By reason of said opening *g* being under water, no air can pass through said opening *g* in pipe *a* into the water supply tank *B*, consequently the water being heated in the water well *C* is kept at a depth sufficient to generate the steam requisite for sterilizing and to cover the opening *g* in the air pipe *a* until such time as the quantity of water in said water well is sufficiently reduced by evaporation to bring the level of the water being heated therein below the opening *g*

in said air pipe *a*, whereupon, by reason of the admission of air through said opening *g*, in such air pipe *a* and so into the water supply tank *B*, sufficient water is displaced in said water supply tank, flows down through water pipe *b* and again submerges and excludes air from said opening *g* in said air pipe *a* whereupon the flow of water into the water well ceases until evaporation again occurs, as above described.

By this invention not only is a constant supply of water automatically furnished to the water well or cup *C* but sterilization is accomplished by the use of a very small quantity of water and the consequent advantage of necessity for very little heat to generate the steam therefor.

I have found in practice that the reservoir *B* can be filled through the sterilizing chamber *A* by supplying water to said chamber and tilting the apparatus so that water can pass through the tube or pipe leading from the sterilizing chamber to the reservoir but for a large apparatus which cannot be conveniently tilted, I may provide an air tight plug *L* in the reservoir and supply the pipe *b* with a cock *m* to be closed to prevent water from gaining access to the cup or well while the reservoir is being filled.

I claim—

In a sterilizer, a sterilizing chamber having its bottom provided with a depending portion forming a well, said well being adjacent to the periphery of said bottom, a reservoir in proximity to the sterilizing chamber, a pipe communicating with the well and with the reservoir, a pipe communicating with the well on a plane above the first mentioned pipe, said second mentioned pipe extending through the bottom of the reservoir and terminating near the top thereof, a cover for the sterilizing chamber, instrument supports in the sterilizing chamber, said supports being adjacent to an opposite portion of the said bottom and offset from the edge of the well, whereby easy access to said well is provided when the cover is removed, means for heating the liquid in the well, and a gage glass for the reservoir.

In testimony whereof, I affix my signature in the presence of two witnesses.

ROY LEE SPAULDING.

Witnesses:

C. A. SPAULDING,
MILDRED BARNES.