No. 854,318. PATENTED MAY 21, 1907.

J. B. WANTZ.

ELECTRIC STERILIZER.

APPLICATION FILED MAR. 9, 1907.

2 SHEETS—SHEET 1.

Fig. 1.

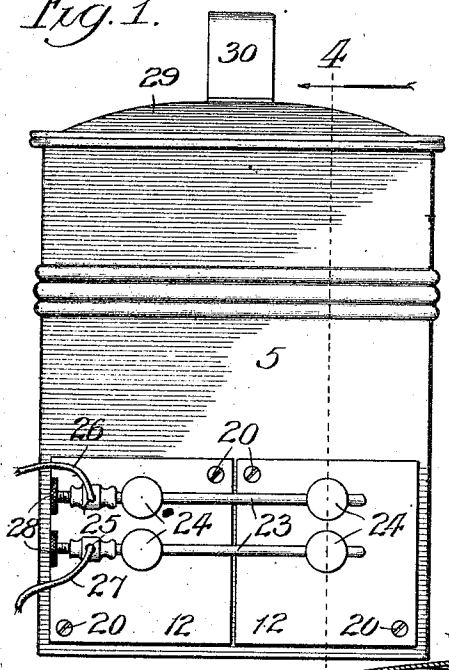


Fig. 2.

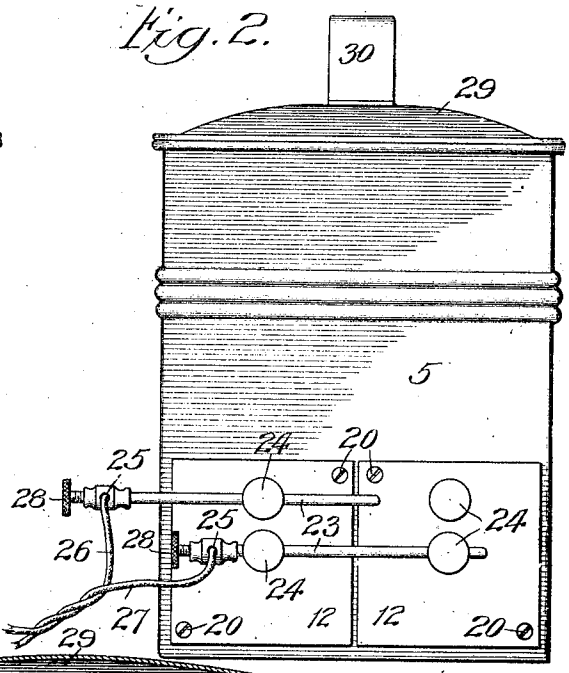
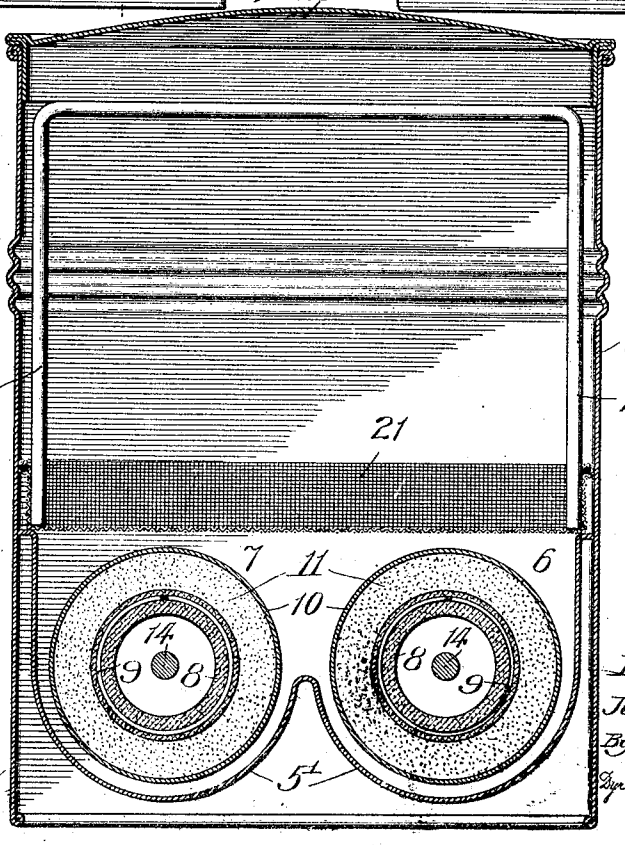


Fig. 3.



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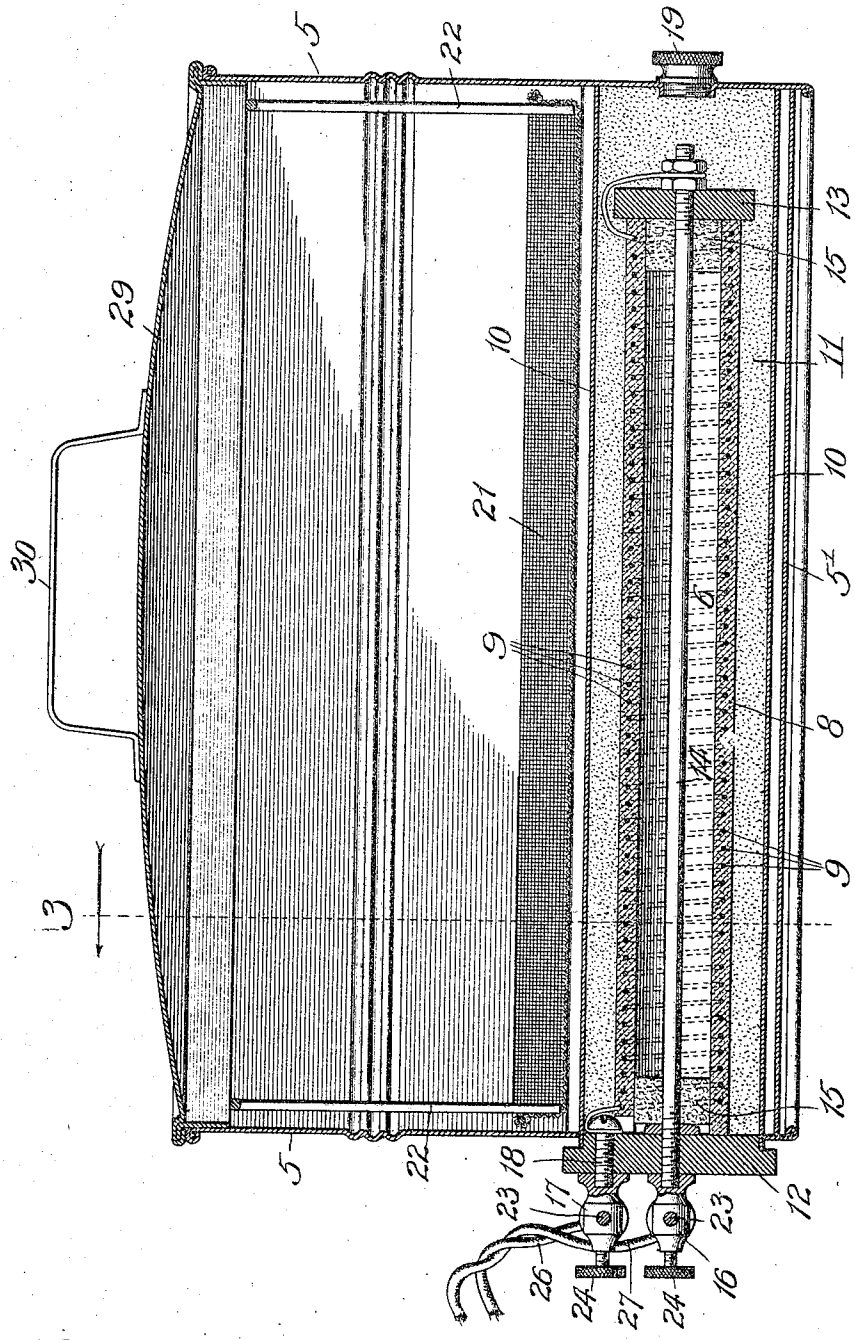
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2 SHEETS—SHEET 2.

Fig. 4.



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UNITED STATES PATENT OFFICE.

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ELECTRIC STERILIZER.

No. 854,318. Specification of Letters Patent. Patented May 21, 1907.

Application filed March 9, 1907. Serial No. 361,424.

To all whom it may concern:

Be it known that I, JULIUS B. WANTZ, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Electric Sterilizers, of which the following is a specification.

My invention relates to an improvement in the class of electrically-heated sterilizers, which I have devised, more particularly though not exclusively, for use by surgeons in sterilizing their instruments.

The object of my invention is to improve the construction of such a sterilizer in matters of detail, hereinafter described, to the end of increasing its efficiency, especially as to readiness of heating the sterilizing liquid (usually water or a suitable aqueous chemical solution), of facilitating the removal of the resistance-coils, and of economizing in current by adapting one or more of the coils employed to be cut out of circuit while leaving therein the other or others to furnish sufficient heat for keeping the liquid hot while the use of the sterilizer is temporarily interrupted.

In the accompanying drawing, Figure 1 shows my improved sterilizer by a view in end elevation with both resistance-coils in service; Fig. 2 is a similar view of the same, but with one of the coils out of service; Fig. 3, a section taken at the line 3 on Fig. 4 and viewed in the direction of the arrow, and Fig. 4, a section taken at the line 4 on Fig. 1, viewed in the direction of the arrow and enlarged.

The receptacle 5, which is preferably formed of sheet-metal in the oblong rectangular shape represented, has an in-set bottom 5^1 of approximate W-shape in cross-section, affording longitudinal concave parallel recesses or troughs in its upper side to conform to the cylinders of the resistance-coils 6 and 7 for the purpose hereinafter described. The coils, which are alike, are each composed of a tube 8 of refractory material having wound about and embedded in it an electrical resistance wire 9, the tube being incased in a hollow sheet-metal cylinder 10 with a filling of granular heat-retaining material 11, such as white sand, within it about the tube 8. The outer head 12 of each coil, composed of a plate of slate, or other suitable refractory and electrically insulating material, and the inner head 13, consisting of a plate of similar material, are rigidly fastened to the coil-ends by a rod 14 passing longitudinally and centrally through end-bearings 15 in it and through the heads, and secured by nuts on its threaded ends, the nut on the outer end forming a binding-post 16; and a similar binding-post 17 being fastened on a screw 18 in the head 12, with which one end of the wire 9 is connected, the opposite end being connected with the inner projecting end of the rod 14. The tubular coil-casings 10 extend from the heads 12 through the front wall of the receptacle, to which they are fastened, as by soldering, to the rear wall thereof, in which are provided, concentric with them, screw-plugs 19 for confining the sand 11, either of which may be readily withdrawn when it is desired to empty out the sand, say preparatory to removing a burned-out coil for replacing it with a new one. The heads 12 are fastened to the front wall of the receptacle each by two screws 20 passing through its corner-portions. These are readily removable to free the respective coil and permit it to be withdrawn through the front wall.

A tray 21 of numerously perforated and preferably galvanized sheet-metal, for supporting the instrument to be sterilized, fits removably inside the receptacle, seating upon the cylinders 10; and it is provided on its ends with bail-like rigid handles 22 by which to manipulate it.

The two binding-posts 16 form a pair as do also the two posts 17, and the members of each pair contain horizontal alining apertures through which passes a connecting-pin 23 releasably fastened in place by set-screws 24 working in the outer ends of the posts, each pair having an aperture 25 in its head-portion in which to fasten to it one of the two wires 26, 27, for connection with a suitable source of electric current for supplying the coils, as through the medium of the usual plug (not shown) on the free ends of the wire, adapted to be introduced into the socket of an incandescent electric lamp. The wires

are fastened in the pin-heads by binding-screws 28.

The receptacle is shown to be provided with a removable cover 29 having a handle 30.

By providing the bottom 5^1 in the convolute form in cross-section represented, instead of flat, the coil-containing cylinders are partly enveloped in it and the interposed water-space is narrow; so that comparatively little water, the level of which must extend above the base of the tray, is required, in fact only a pint where otherwise a quart would be required. Thus a smaller body of the sterilizing water has to be heated, with the advantage of saving time and current in heating it.

By the described coupling of corresponding coil-terminals in pairs, while the sterilizer is in use, withdrawing a pin 23 from its engagement with one member of the pair, into the position shown in Fig. 2, cuts out of circuit the one coil, leaving the other coil in circuit to keep the water hot during temporary intervals of non-use of the sterilizer, and in condition to be quickly heated to the required higher temperature for sterilizing, upon returning that pin to the normal position represented in Fig. 1 to include in circuit the coil that was cut out. The sand packing about the coils affords the advantage, because of its heat-storing quality, of assisting in keeping the water hot and thus economizing in current. Moreover, the convolute bottom being in-set, as shown, it is raised from any surface on which the sterilizer is supported at the lower surrounding edges of the base of the receptacle; and the manner of fastening the coils in place renders them readily removable and replaceable.

What I claim as new and desire to secure by Letters Patent is—

1. In an electric sterilizer, the combination of a receptacle having a bottom of convolute form in cross-section, and resistance-coils in tubular casings supported to extend in the troughs of said bottom, for the purpose set forth.

2. In an electric sterilizer, the combination of a receptacle having an in-set bottom of convolute form in cross-section, and resistance-coils in tubular casings supported to extend in the troughs of said bottom, for the purpose set forth.

3. In an electric sterilizer, the combination of a receptacle having end-openings, tubular resistance-coil casings fastened in the receptacle to extend along the base thereof and coincide with said openings, and resistance-coils supported in said casings and insertible and withdrawable through said openings.

4. In an electric sterilizer, the combination of a receptacle having openings in one end and plug-closed openings in its opposite end, tubular resistance-coil casings fastened in the receptacle to extend along the base thereof and coincide with said openings, resistance-coils supported in said casings and insertible and withdrawable through said first-named openings, and a filling of granular heat-retaining material in each casing about the coil therein.

5. In an electric sterilizer, the combination of a receptacle, a pair of tubular resistance-coil casings fastened in the receptacle to extend along its base, resistance-coils supported in said casings and provided on their outer ends with heads, binding-posts on the heads, with which the wire-ends of the coil are connected, and pins adapted to have connected with them current-supply wires, separably connecting the binding-posts from one head to the other in pairs, for the purpose set forth.

6. In an electric sterilizer, the combination of a receptacle, a pair of tubular resistance-coil casings fastened in the receptacle to extend along its base, resistance-coils supported in said casings with a filling of heat-retaining material about them and provided on their outer ends with heads, binding-posts on the heads with which the wire-ends of the coils are connected, and pins adapted to have connected with them current-supply wires, separably connecting the binding-posts from one head to the other in pairs, for the purpose set forth.

7. In an electric sterilizer, the combination of a receptacle having a bottom of convolute form in cross-section, resistance-coils in tubular casings supported to extend in the troughs of said bottom, and a handle-equipped tray seating in the receptacle on said casings, for the purpose set forth.

8. In an electric sterilizer, the combination of a receptacle, a pair of resistance-coils fastened in the receptacle to extend along its base and each comprising a wire-wound tube of refractory material with heads on its inner and outer ends and a rod connecting them through the tube, having one end of the wire connected with it and provided on the outer head with a binding-post, and a second binding-post on said outer head with which the other end of the wire is connected, connecting pins withdrawably passing through the binding-posts with which corresponding ends of the wires of the two coils are connected and adapted to have connected with them current-supply wires, and means on the binding-posts for releasably fastening said pins to them.

9. In an electric sterilizer, the combination of a receptacle having a bottom of convolute form in cross-section and end-open-

ings, tubular casings fastened in the receptacle to extend along the troughs of the bottom and coincide with said openings, resistance-coils supported in said casings to be withdrawable through said openings and provided with heads on their outer ends covering said openings, said heads carrying binding-posts, and removable fastening devices securing the heads to the receptacle-wall.

JULIUS B. WANTZ.

In presence of:
RALPH A. SCHAEFER,
KATHLEEN CORNWALL.