No. 810,533. PATENTED JAN. 23, 1906.

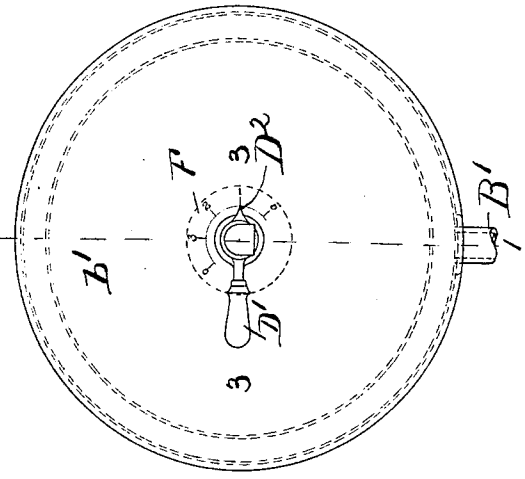
J. E. HALL.

VALVE MECHANISM FOR STERILIZERS.

APPLICATION FILED FEB. 3, 1903.

3 SHEETS—SHEET 1.

Fig. 2.



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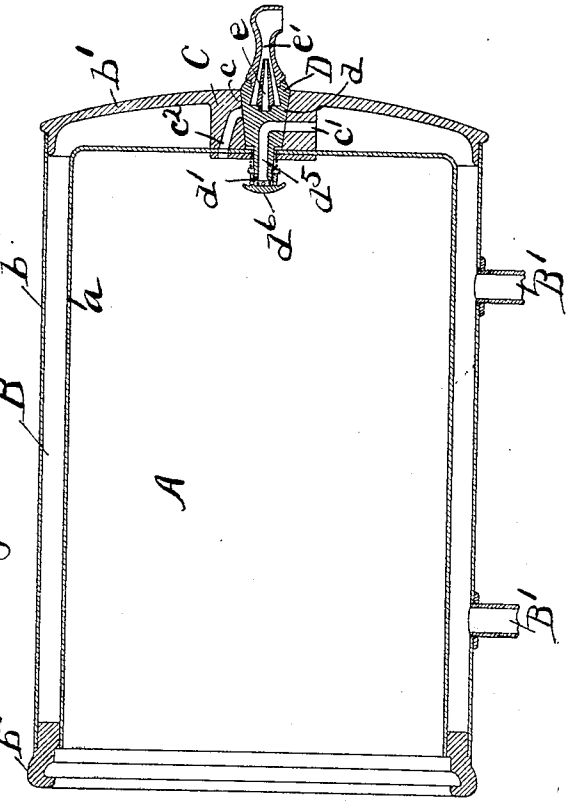

Witnesses

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3 SHEETS—SHEET 2.

Fig. 4.

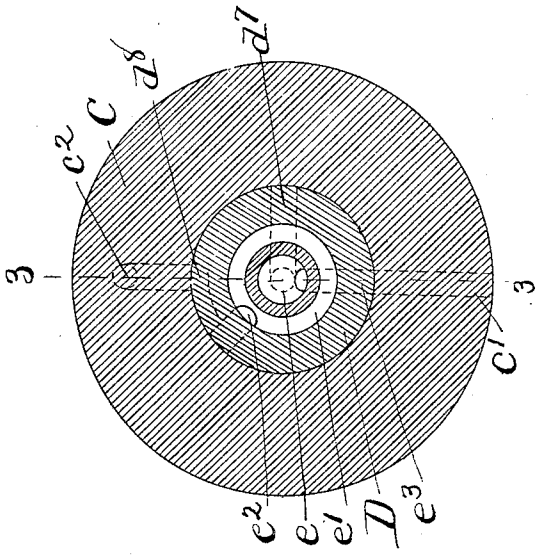
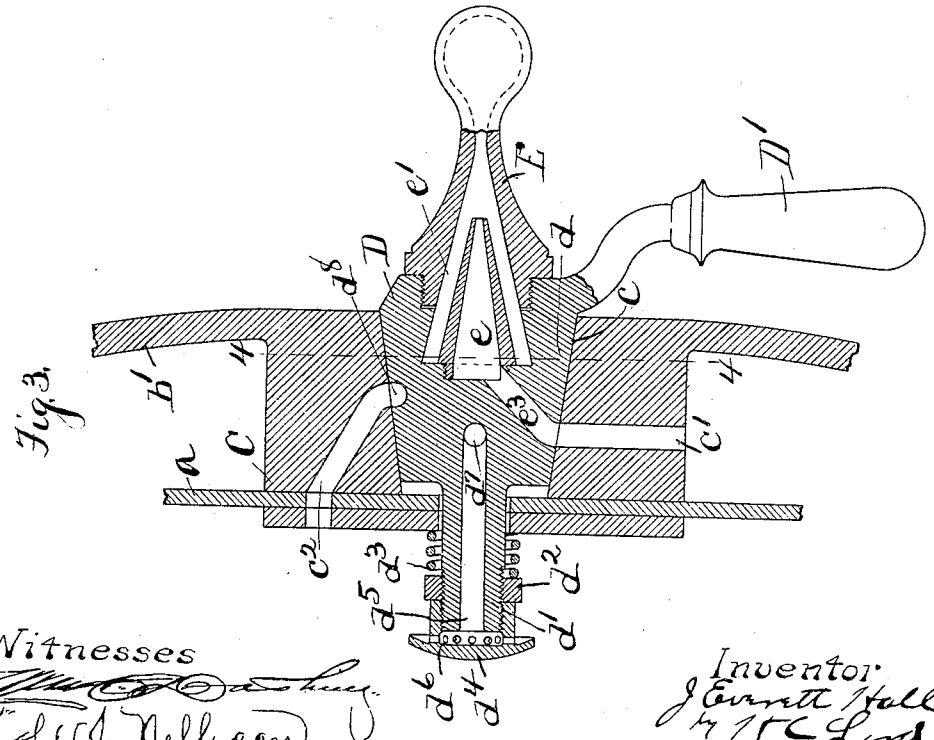


Fig. 3.



Witnesses

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3 SHEETS—SHEET 3.

Fig. 1.

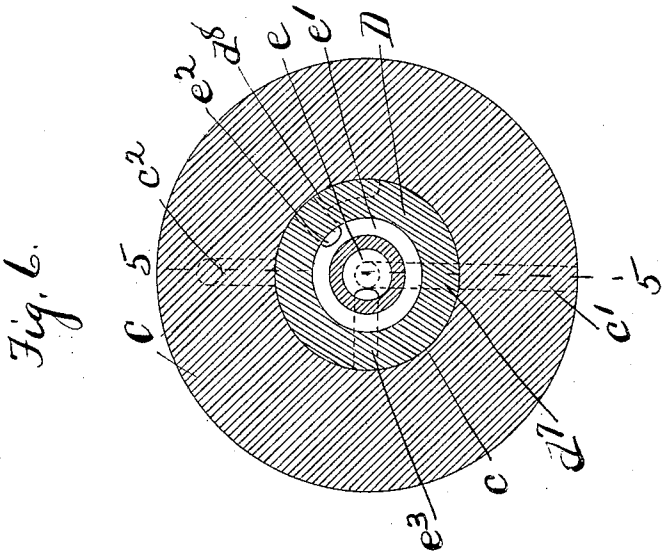
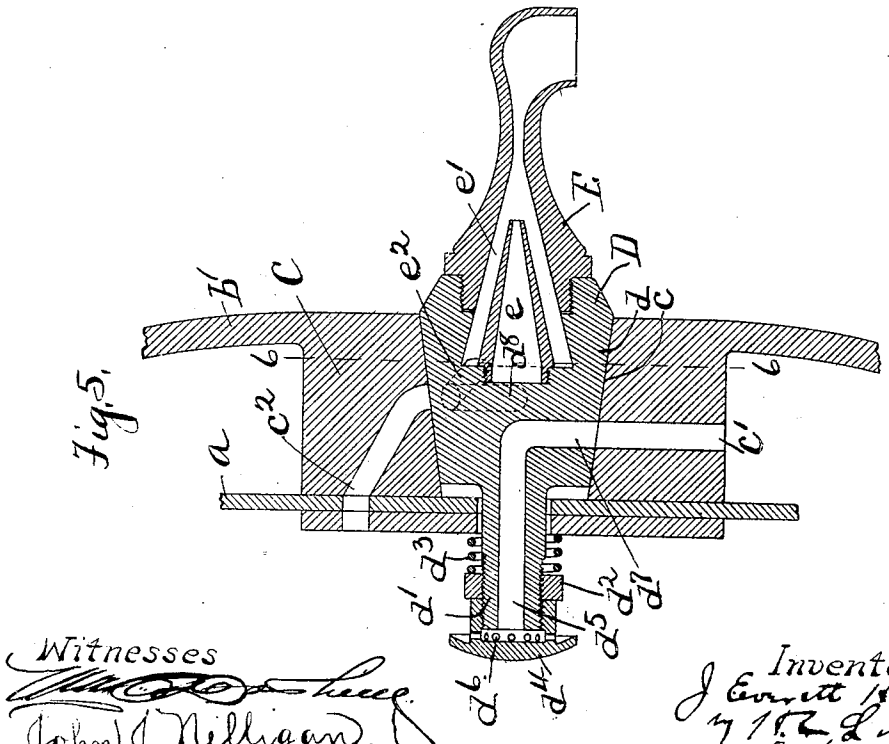


Fig. 5.



Witnesses

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Attorney

UNITED STATES PATENT OFFICE.

J EVERETT HALL, OF ERIE, PENNSYLVANIA.

VALVE MECHANISM FOR STERILIZERS.

No. 810,533. Specification of Letters Patent. Patented Jan. 23, 1906.

Application filed February 3, 1903. Serial No. 141,659.

To all whom it may concern:

Be it known that I, J EVERETT HALL, a citizen of the United States, residing at Erie, in the county of Erie and State of Pennsylvania, have invented new and useful Improvements in Valve Mechanisms for Sterilizers and the Like, of which the following is a specification.

This invention relates to improvements in valve mechanisms for sterilizers and the like; and it consists in certain improvements in the construction thereof, as will be hereinafter fully described, and pointed out in the claims.

The invention is especially adapted, though not limited, to that class of sterilizers used for treating dressings, linen, &c., wherein the sterilizing-chamber is surrounded by a heating-chamber, through which steam or sterilizing fluid is admitted. It is desirable to provide means for quickly exhausting the steam or sterilizing fluid from the chamber, and one of the features of the invention is a device for this purpose.

The invention is illustrated in the accompanying drawings, as follows: Figure 1 is a longitudinal section of the device on the line 1 1 in Fig. 2. Fig. 2 is an end elevation; Fig. 3, a section on the lines 3 3 in Figs. 2 and 4; Fig. 4, a section on the line 4 4 in Fig. 3; Fig. 5, a section on the line 5 5 in Fig. 6; Fig. 6, a section on the line 6 6 in Fig. 5.

A marks the sterilizing-chamber. It is formed by the shell *a*. Any suitable door (not shown) may be used.

B marks the heating-chamber. This surrounds the chamber A and is formed of the cylindrical shell *b* and head *b'*. The front is closed by the ring b^2, which forms the door-seat.

It has been customary heretofore with me to make the connections with the chamber A through the shell *b*. This necessitated a very nice forming of the parts in order to bring the various openings in the shells *a* and *b* into register and usually required some fitting as the parts were assembled. This can all be obviated in the present invention by placing the connection in the end, preferably in the center of the end. This may be accomplished by assembling the outer and inner shells by an endwise movement of the inner shell in the outer shell. Where this is done, the sterilizing-chamber may be said to be nested in the outer shell and the ends brought together. This endwise movement of the sterilizing-chamber in the shells may be termed the "nested" ends. A preferable structure is shown in this location, as follows:

A valve-body C is cast in the head *b'*. It is provided with the tapered valve-opening *c*, in which is arranged the plug D, having the tapered valve portion *d*. An extension *d'* protrudes from the plug D into the chamber A. It is screw-threaded, and the nut d^2 on this screw-thread forms a shoulder. A spring d^3 is interposed between the shoulder d^2 and the end of the shell *a* and holds the plug in place in the valve-body. A flange-nut d^4 forms a lock-nut for the nut d^2 and connects the way d^5 in the plug with the chamber A through the passages d^6. The port *c'* in the valve-body is adapted to come into register with way d^7, (see Fig. 5,) and thus connects the chambers B and A. An exhaust-port c^2 is arranged in the body C and extends from the chamber A to the opening *c*. The segmental way d^8 is adapted to be brought into register with the port c^2. The way d^8 is connected through the way c^2 with the exhaust-way *e'*, which leads to the atmosphere.

The apparatus so far described provides for admitting and exhausting the steam from the chamber. As before stated, it is often desirable to force this exhaust. This is accomplished in the device shown as follows: An ejector-nozzle *e* opens into the exhaust-way *e'*. A way e^3 is adapted to be brought into register with the port *c'* and connect the nozzle *e* with the chamber B, so that where this chamber is provided with the steam under pressure, as is usual, either by generation in the chamber or from some supply, as through the pipe B', an outflow through the nozzle *e* may be accomplished by connecting it with the chamber B, as just described. The length of the segmental way d^8 is such as to permit of the ways d^8 and e^3 being brought into register with the ports c^2 and *c'*, respectively, at the same time. (See Fig. 4.) When this is done, the ejector operates and forces a rapid exhaust from the chamber A.

The plug is provided with the handle D' and a pointer D^2. A dial F is arranged on the head *b'* and is provided with the marks "0, 1, 2, 3, 0," in the order here given. With the pointer at either "0" the ways are out of register with the ports in the body. By turning the pointer to "1" the way d^7 is brought into register with the port *c'*. (See Figs. 5 and 6.) Moving the pointer to "2" takes

the way d^7 out of register with the port c' and brings the way d^8 into register with the port c^2. Moving the pointer to "3" brings the way e^3 into register with the port c', the way d^8 remaining in register with port c^2. (See Figs. 3 and 4.) A further movement of the pointer to "0" takes these ways out of register. From this it appears that steam may be admitted to the chamber A and exhausted from the chamber and that the exhaust may be expedited through the action of the ejector. The flange-nut d^4 deflects the entering steam and prevents it from passing in a jet into the chamber. This prevents the undue moistening of anything in the chamber. This of course is particularly true where the admission is in the end of the chamber.

What I claim as new is—

1. In a sterilizer, the combination of an outer and inner chamber, having closed heads at one end, one of said chambers being nested within the other with the heads adjacent to each other, forming an intermediate chamber, and valve devices arranged in said heads for controlling the admission and exhaust of sterilizing fluid to and from the inner chamber.

2. In a sterilizer, the combination of an outer and inner chamber, having closed heads at one end, one of said chambers being nested within the other with the heads adjacent to each other, forming an intermediate chamber, and valve devices arranged in the heads for connecting the chambers and for controlling the exhaust of the sterilizing fluid from the inner chamber.

3. In a sterilizer, the combination of an outer and inner chamber, having closed heads at one end, one of said chambers being nested within the other with the heads adjacent to each other, forming an intermediate chamber, and valve devices arranged in the heads for connecting the chambers and for controlling the exhaust from both chambers.

4. In a sterilizer, the combination with the chamber; of a valve mechanism controlling admission and exhaust from said chamber; an ejector connected with the exhaust; and a single device arranged to actuate the valve mechanism to admit the sterilized medium, exhaust it, and connect the ejector.

5. In a sterilizer, the combination with the chamber; of a single valve mechanism controlling the admission and exhaust of sterilizing medium to and from said chamber; and an ejector controlled by said valve mechanism.

6. In a sterilizer, the combination with the chamber, of a plug-valve controlling the exhaust from said chamber; and an ejector arranged on the plug.

7. In a sterilizer, the combination with the chamber; of a plug-valve controlling the admission and exhaust from said chamber; and an ejector on said plug.

8. In a sterilizer, the combination with the chambers A and B; the valve-body C, said valve-body having the valve-opening c; the way c' connecting the valve-opening with the chamber B; and the way c^2 connecting the valve-opening with the chamber A; and the plug D having the ways d^5, d^7, leading to the chamber A and adapted to be brought into register with the way c'; the annular way d^8 arranged to be brought into register with the way c^2; the way e^2 leading to the exhaust e'; the ejector-nozzle e in the exhaust-passage; and the way e^3 adapted to be brought into register with the way c'.

9. In a sterilizer, the combination with the chambers A and B; the valve-body C arranged between the shells of the chambers A and B, said valve-body having the valve-opening c; the way c' connecting the valve-opening with the chamber B; and the way c^2 connecting the valve-opening with the chamber A; and the plug D having the ways d^5 d^7, leading to the chamber A and adapted to be brought into register with the way c'; the annular way d^8 arranged to be brought into register with the way c^2; the way e^2 leading to the exhaust e'; the ejector-nozzle e in the exhaust-passage; and the way e^3 adapted to be brought into register with the way c'.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

J EVERETT HALL.

Witnesses:
W. E. CADWELL,
C. G. L. MCCORD.