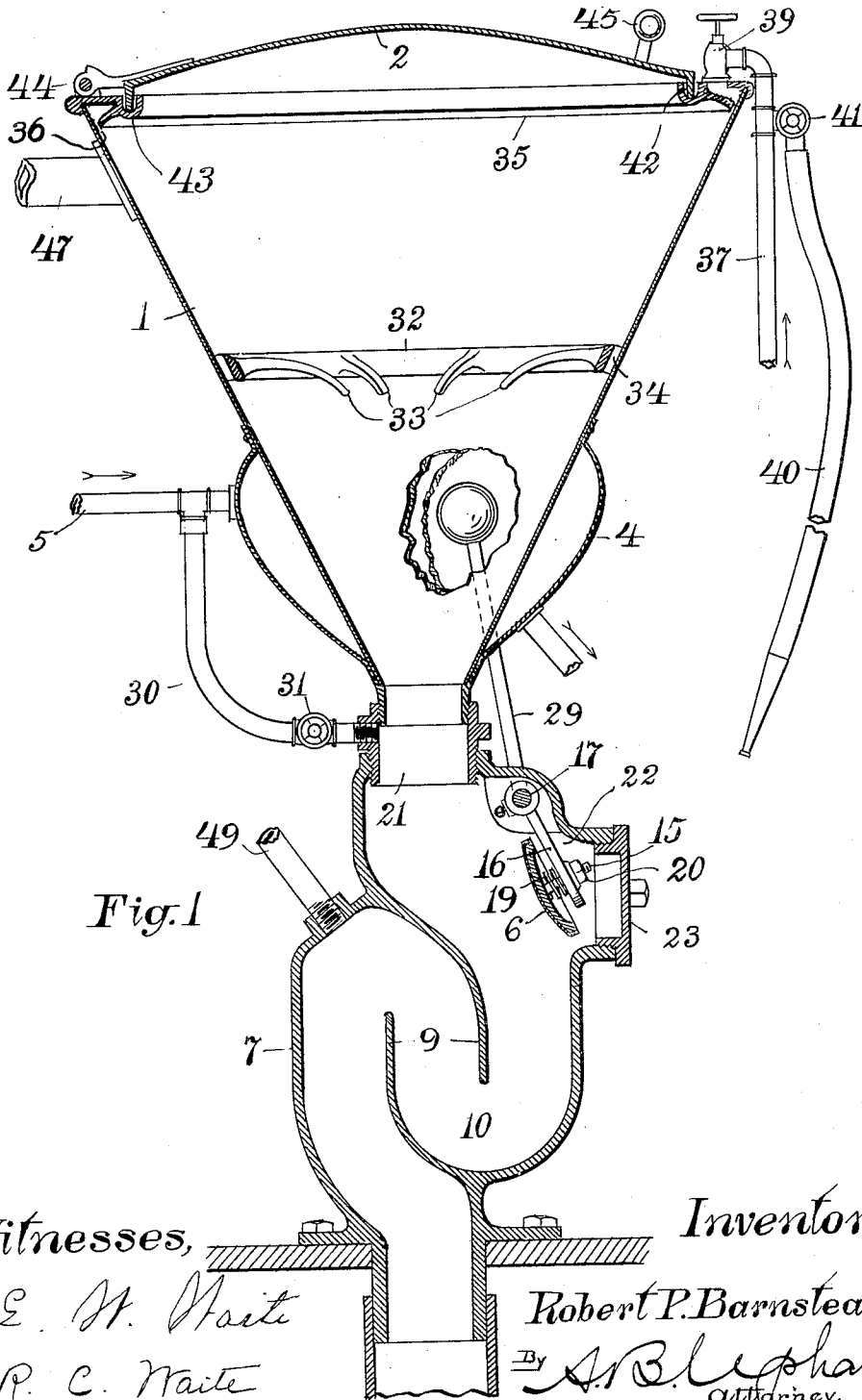


R. P. BARNSTEAD.
STERILIZING HOPPER.
APPLICATION FILED NOV. 7, 1910.

Patented Feb. 2, 1915.
2 SHEETS-SHEET 1.

1,126,937.



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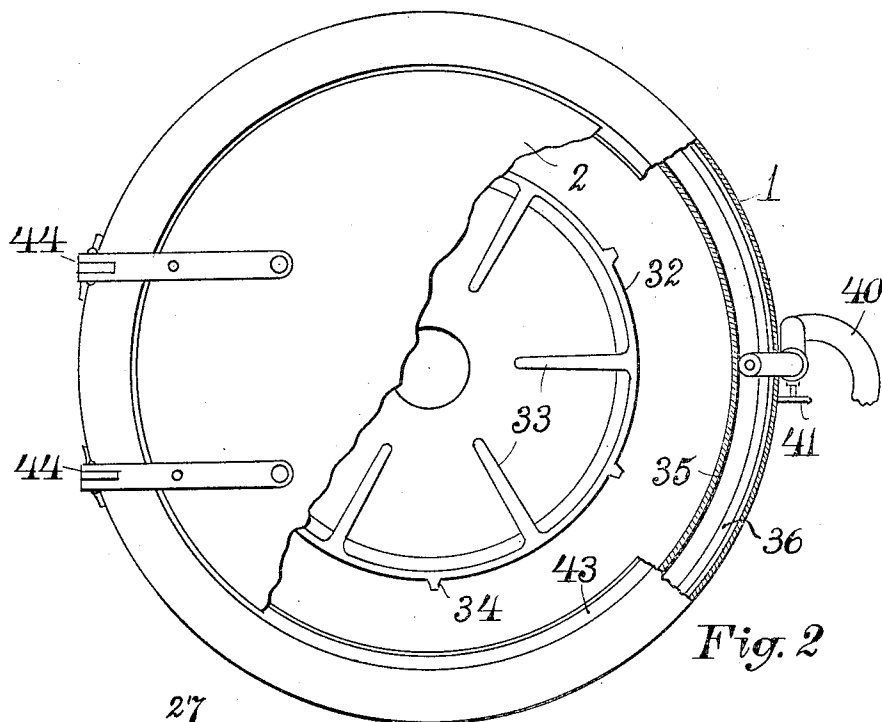


Fig. 2

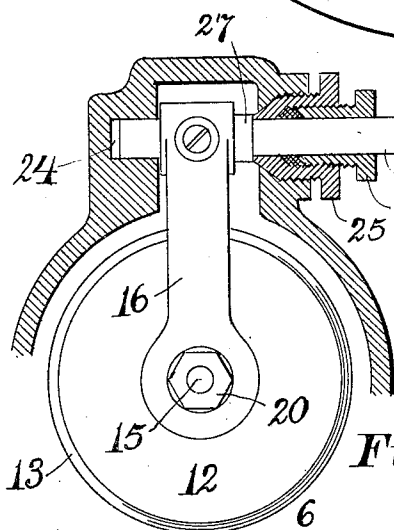


Fig. 3

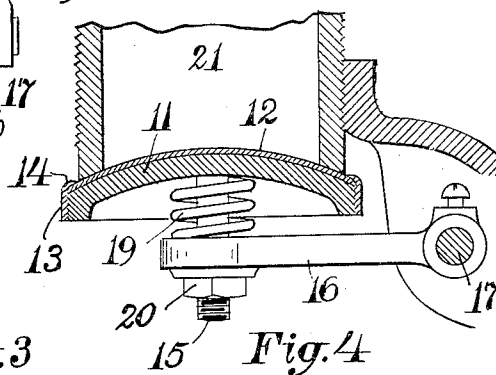


Fig. 4

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UNITED STATES PATENT OFFICE.

ROBERT P. BARNSTEAD, OF BOSTON, MASSACHUSETTS.

STERILIZING-HOPPER.

1,126,937.

Specification of Letters Patent.

Patented Feb. 2, 1915.

Application filed November 7, 1910. Serial No. 591,144.

To all whom it may concern:

Be it known that I, ROBERT P. BARNSTEAD, a citizen of the United States, and a resident of Boston, in the county of Suffolk and Commonwealth of Massachusetts, have invented certain new and useful Improvements in Sterilizing-Hoppers, of which the following is a specification.

The object of this invention is the construction of improved apparatus for destroying the bacteria in waste-matter, and particularly in the urine and feces of hospital patients suffering from infectious diseases.

My improvements relate first to means for trapping the discharge from the sterilizing part of the apparatus; second, to the discharge valve; third, to means for more thoroughly insuring the sterilizing of the waste-matter; fourth, to improved means for cleaning out the apparatus, and finally, to other details of construction and arrangement hereinafter set forth.

Referring to the drawings forming part of this specification, Figure 1 is a central sectional elevation of apparatus embodying my improvements. Fig. 2 is plan view of the hopper, with parts broken away. Fig. 3 is a face view on a larger scale of the valve, and Fig. 4 a sectional view of the same.

As shown in Fig. 1, the sterilizing part of the apparatus consists of a conical chamber 1 provided with a hinged cover 2 made airtight with a water-seal. This hopper is heated and its contents sterilized by means of steam introduced within the jacket 4, as through the pipe 5. Beneath the discharge end of this chamber 1, which is adapted to be closed by the clapper valve 6, is the trap consisting of a single casting 7 having partitions 9 arranged to provide the trap-passage 10. The waste matter having been poured into the hopper 1, the valve 6 being first closed, the steam admitted to said jacket 4 soon raises the temperature of the contents of the hopper to a degree sufficiently high to destroy all infectious germs contained therein. This being thoroughly done, said valve is thrown open and the sterilized contents permitted to discharge through said trap down into the drain.

In previous apparatus of the kind, sliding valves were employed; but these were liable to become clogged with refuse, were almost impossible to keep clean, and also

were prone to leakage. By the use of the pivoted valve 6, which can be swung down and out of the path of the contents descending from the hopper, all these objections are entirely overcome. Said valve is preferably a portion of a sphere, and consists of a metal back 11 faced with suitable material 12 held in place by a ring 13 screwed upon the periphery of said back and having a slight flange 14 by which the same is gripped. See Fig. 4. From the center of this back projects a screw-stud 15 loosely through the lever arm 16 fixed upon a spindle 17, as in Figs. 1, 3 and 4. A heavy coiled spring 19 between said back and lever arm, and a nut 20 on the end of said stud, permits of a slight adjustment of the valve with respect to the hopper-mouth 21. When said valve is wide open it rests within a recess access to which is obtained by removing the screw cap 23. The inner end of said spindle 17 rests in a blind opening 24, while its other end passes out through a stuffing box consisting of the members 25 and 26. The member 25 fits against a shoulder 27 on said spindle and so permits of lateral adjustment of said spindle and its connected valve. A weighted arm 29 fixed upon the outer end of said spindle serves both as a means for opening and closing the valve, and for retaining it in either position.

To insure the complete sterilization of every part of the hopper's contents, I provide the steam pipe 5 with a branch 30 entering the hopper-mouth 21 as close to the lower extremity thereof as practicable; furnishing said branch pipe with a valve 31 normally closed. After steam has entered the packet 4 long enough to heat the hopper's contents to a high temperature, said valve 31 is opened and steam admitted directly into such contents close to the very bottom thereof. This insures that the section of the waste matter which might otherwise escape sufficient sterilization, shall be thoroughly acted upon and have every possible germ absolutely destroyed.

A suitable distance down within the hopper is located a skeleton shelf comprising an annulus 32 having radial, terminally curved arms 33 projecting inward therefrom. The purpose of this shelf is to support a bed-pan and the like while being washed out and sterilized. This shelf is illustrated in Figs. 1 and 2. Slight ribs or bosses 34 are provided in order to hold the annulus far

enough out of contact with the inner surface of the hopper to permit ample cleansing thereat.

Close beneath the overhanging upper edge 5 of the hopper is a circular channel 35 having a downwardly directed opening or slit 36 through which to jet a flooding curtain of water down the interior of the hopper, for the purpose of thoroughly cleaning it after 10 it has performed a sterilizing task. The water-supply to this circular channel comes from the pipe 37, and is controlled by a valve 39. For further insuring ample cleaning of the hopper and of the toilet utensils 15 laid upon said shelf, a hose 40 controlled by a valve 41 is connected with said pipe 37.

As shown in Fig. 2, the cover 2 is circular in outline, while as indicated in Fig. 1, it is formed with a flange 42 adapted to rest 20 within the deep groove 43, which permits of a water-seal for the prevention of the escape of odors. The hinges 44 are sufficiently long to permit proper and unimpeded rising of said flange from said groove when the cover 25 is raised. A handle 45 is provided for such raising of the cover.

In using this sterilizing hopper, the handle or arm 29 is first swung down to somewhat 30 more than a horizontal position and the valve 6 thereby closed. The cover 2 is then opened, the waste matter dumped into the hopper and said cover closed. Steam is admitted to the jacket 4, and after the same has quite thoroughly heated the contents of 35 the hopper, steam is let in through the branch pipe 30 to complete the sterilization. It should be noted that if the steam were admitted through the branch pipe 30 before

the contents of the hopper have been previously sufficiently heated, the consequent condensation of the steam would cause such a 40 loud hammering as to render the apparatus highly objectionable in any hospital. Following the sterilization, the steam is shut off and the valve 6 opened, permitting the 45 contents to be discharged through the trap-passage 10 to the drain.

The vent or ventilating pipe 47, shown in Fig. 1, is designed to take care of the odors arising within the hopper before its 50 cover can be swung down, while the vent 49 is for the purpose of preventing the trap from siphoning.

What I claim as my invention and for which I desire Letters Patent is as follows, 55 to wit:—

A sterilizing hopper comprising a conical chamber having a cover seated odor-tight thereon, a jacket surrounding the lower portion of the conical chamber, a trap connected 60 with the bottom of said chamber, a valve closing said connection, means for admitting steam to said jacket, and a skeleton shelf located within said chamber and consisting of an annulus having radial, terminally 65 curved arms projecting inward therefrom, said annulus having ribs or bosses contacting with the inner surface of the chamber.

In testimony that I claim the foregoing invention, I have hereunto set my hand 70 this 28th day of October, 1910.

ROBERT P. BARNSTEAD.

Witnesses:

A. B. UPHAM,

ALEX. I. PECKHAM.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."