(No Model.)

G. M. SHERMAN.

VAPORIZER.

No. 432,843. Patented July 22, 1890.

Fig. 1.

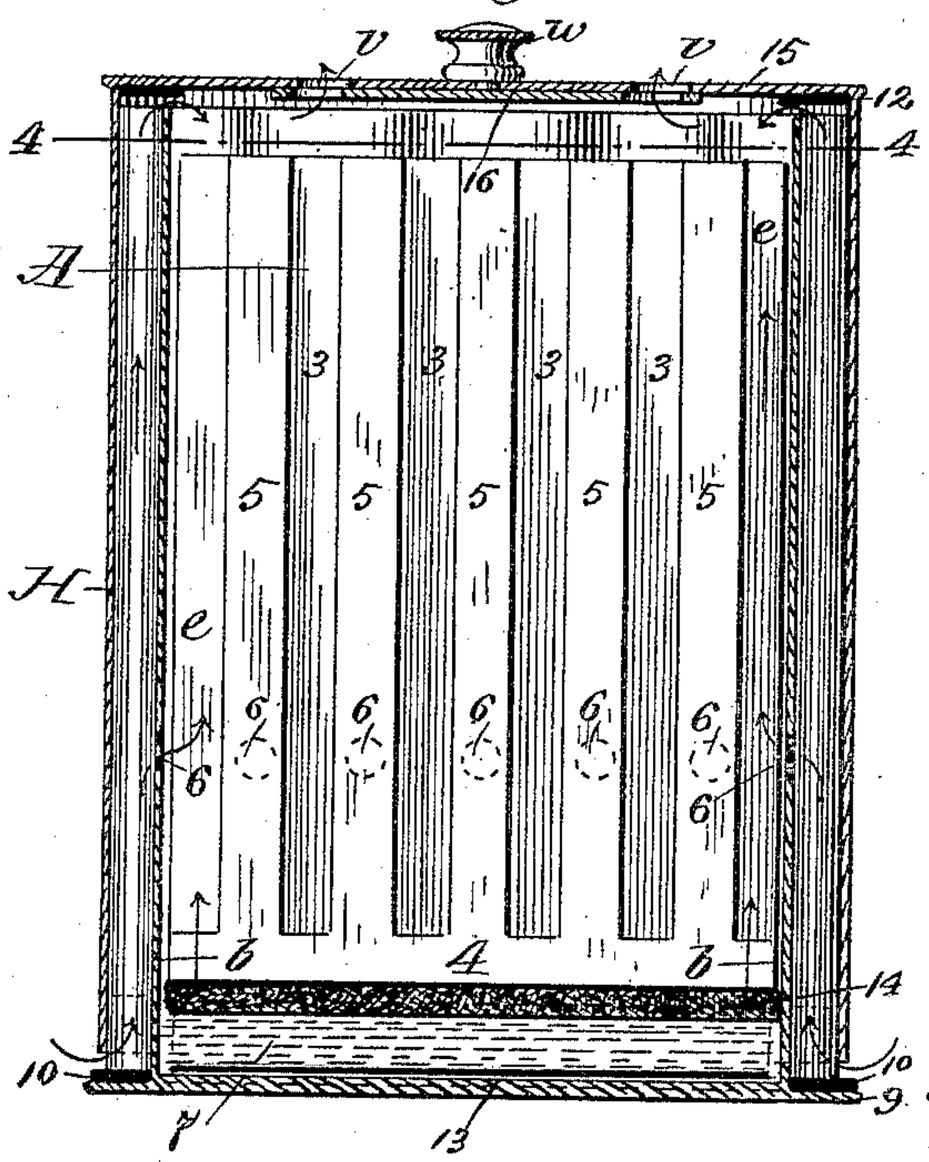


Fig. 2.

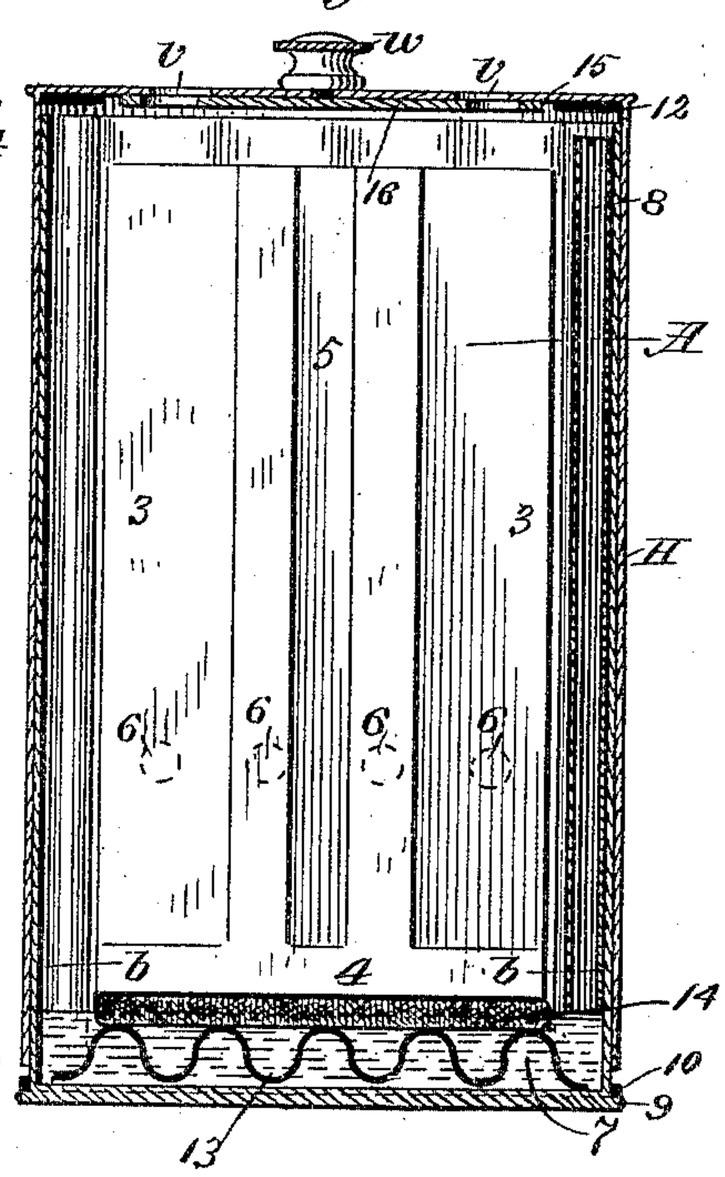


Fig. 3.

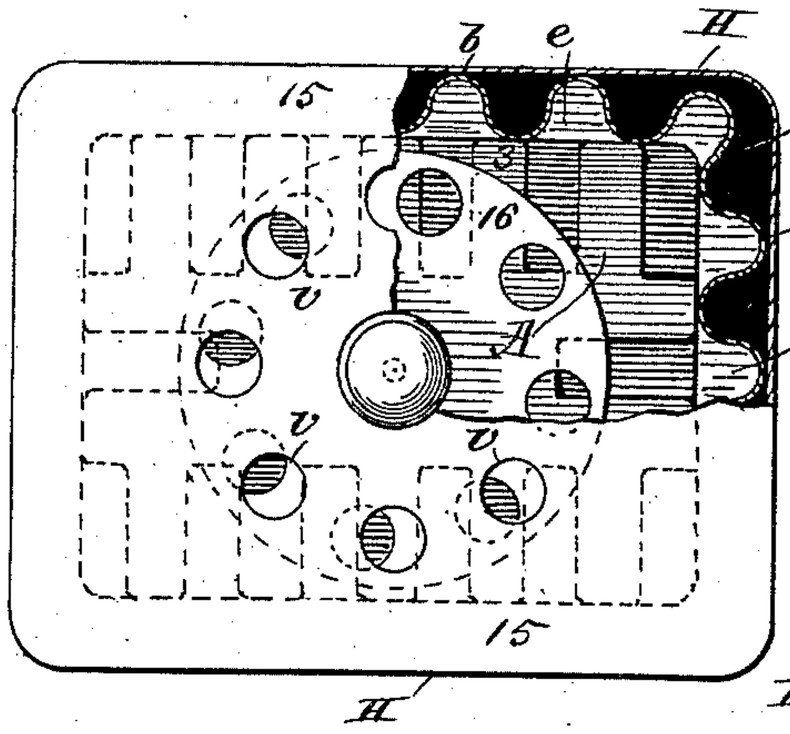


Fig. 4.

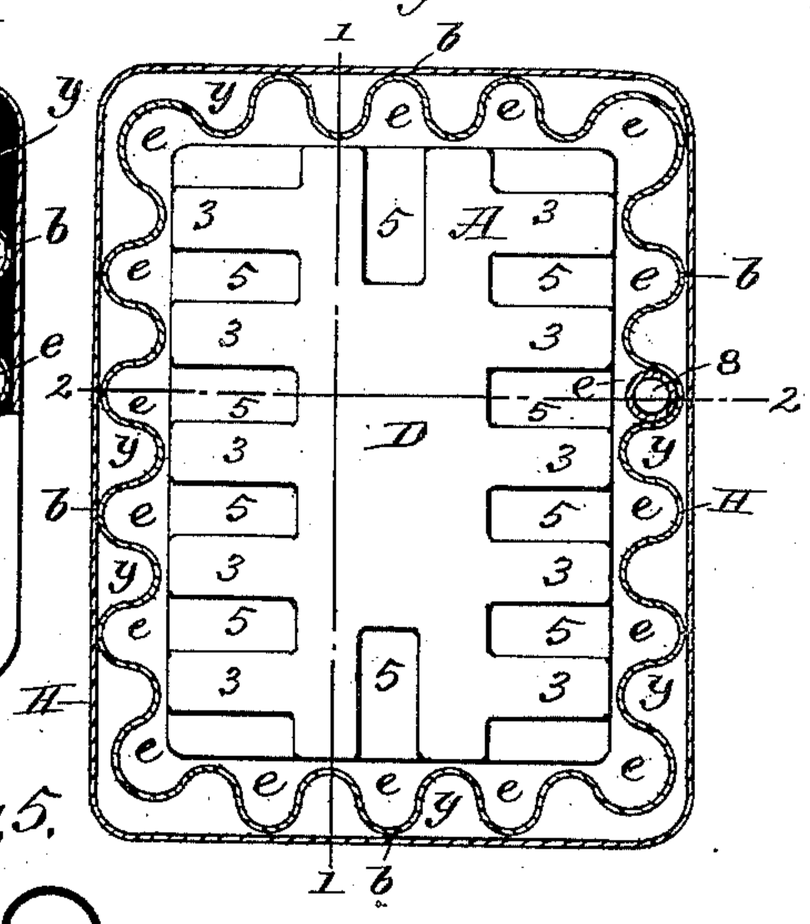
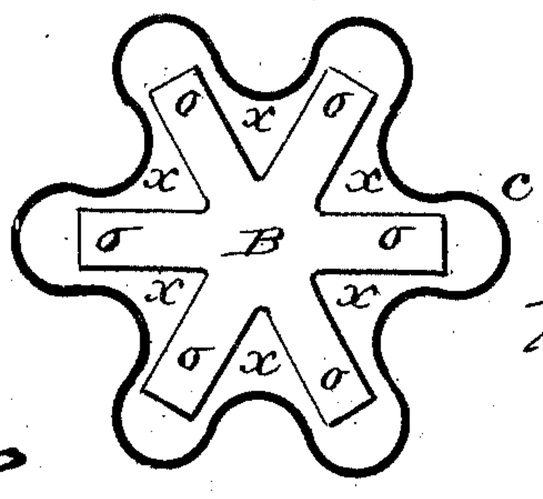


Fig. 5.



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UNITED STATES PATENT OFFICE.

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VAPORIZER.

SPECIFICATION forming part of Letters Patent No. 432,843, dated July 22, 1890.

Application filed November 29, 1889. Serial No. 332,009. (No model.)

To all whom it may concern:

Be it known that I, GARDNER M. SHERMAN, a citizen of the United States, residing at Springfield, in the county of Hampden and State of Massachusetts, have invented new and useful Improvements in Vaporizers, of which the following is a specification.

This invention relates to vaporizers for the atmospheric dissemination of the vapor of liquid disinfectants, perfumes, or other volatile substances, the object being to provide a vaporizer of this class of improved construction; and the invention consists in the peculiar construction and arrangement of the various parts of the device, all as hereinafter fully described, and more particularly pointed out in the claims.

In the drawings forming part of this specification, Figure 1 is a view of the wider and Fig. 2 of the narrower side of a vaporizing device embodying my improvements, the absorbent cast or porous body thereof being shown in full lines in said figures and the casing thereof in section, said figures illustrating other detail parts of the device, which are hereinafter fully described. Fig. 3 is a plan view of the top of the vaporizer, a portion thereof being broken away to show certain parts thereunder. Fig. 4 is a view of the end of said cast or porous body, and a cross-section on line 4 4, Fig. 1, of the outer and inner cases of the vaporizer. Fig. 5 illustrates a modified construction of said porous body and a case therefor.

The lines 1 1 and 2 2, Fig. 4, indicate, respectively, the sectional elevations of the vaporizer-casings in Figs. 1 and 2.

In the drawings, A indicates a porous body or cast, preferably of plaster-of-paris, which is capable of absorbing fluids to a considerable extent, and when such fluids are of a volatile nature of giving off said fluids in vapor form. Said cast or porous absorbent may, if desired, be made from fire-brick material or similar substance, and burned to such slight degree as gives it the requisite rigidity and strength, but leaves it in a porous or absorbent condition well known to those familiar with such brick constructions. The said cast, however, is more economically produced from plaster-of-paris. The said cast or absorbent A is formed with a solid central portion D, having on its sides a series of laterally-extending ribs 3, thereby forming therebetween a series of chambers 5, having surrounding evaporating-walls and having a base 4. The said cast or absorbent is inclosed in a casing consisting of what may be termed an inner and an outer case combined. The said inner case is made, preferably, from metal and having a form in cross-section corresponding to that of said cast A, as shown in Fig. 4. The said inner case is indicated by *b*, and has corrugated walls, through the corrugations of which air-passages are formed, and has one end thereof closed, as shown in Figs. 1 and 2, thereby adapting it to the reception in a chamber at its lower end (indicated by 7) of a volatile fluid, as below described. The inwardly-projecting ribs formed by the corrugations of said inner case *b* are arranged opposite the edges of the said ribs 3 of the porous absorbent A, thereby bringing the inner grooves of said corrugated walls of the case *b* opposite the said vaporizing-chambers 5 in said cast or absorbent, the said inner case grooves and vaporizing-chambers forming conjointly a series of air-passages *e* from one end to the other of the vaporizer, and air flowing through said passages *e* is brought into contact with the surfaces of the walls of said chambers 5 in the absorbent A, and becomes thereby charged with the vapors of said volatile fluid, said vaporized air moving upward and escaping from said passages *e*, as below described. A tube 8 (see Figs. 2 and 4) is placed within said inner casing *b*, and extends from the upper end thereof to the upper portion of said fluid-receiving chamber, the fluid to be supplied to the latter being poured through said tube when said chamber is so filled without removing the absorbent A from the casing; but said tube may be dispensed with and the said chamber 7 be filled by removing the cast or absorbent, if preferred. The said corrugated inner case *b* has a series of air passages or perforations 6 through its sides, as shown in Figs. 1 and 2, through which air is permitted to flow through the said vaporizing-chambers *e*, as below described. The said inner case has a flange 9 formed around its base, against which the be-

low-described outer casing of the vaporizer rests when the latter is closed, and said flanged base is preferably provided with a flexible washer 10, against which the lower end of said outer casing may rest, thereby more tightly closing that end of the vaporizer-case, and a similar washer 12 is placed on the upper end of the said inner case *b*, against which the top of the said outer casing rests, as below described. The said fluid-receiving chamber 7 is provided with a metallic or similar support 13, (shown in Fig. 2 as a strip or plate of corrugated metal,) on which indirectly the said absorbent cast rests, said support being made in the form shown to permit of a free circulation of the fluid contents of said chamber 7 on both sides of said support, thereby affording a free contact of said fluid with the under side of a porous absorbing-pad 14, of felt or similar material, which is interposed between said support 7 and the base 4 of said absorbent cast, the said pad 14 by capillary attraction serving to convey the fluid contents of said chamber to the surface of the base of said absorbent, the latter taking up said fluid by absorption, and thereby becoming charged with said fluid matter in such a way that the surface thereof within its said chambers 5 and elsewhere gives off the vapors of said volatile fluid, which vapors escape from the casing of the vaporizer, as below described.

It is found in practice that certain of the acid solutions used in vaporizers of this class are more or less charged with sediment and substances which, if said acid solutions are allowed to come in direct contact with the absorbent of the vaporizer, fill up the pores thereof more or less, and impair the absorbing efficacy of the cast, and for the purpose of preventing this inconvenient effect the said pad 14, which serves, also, to filter the said fluid as the latter passes through it, is interposed between the base of the absorbent A and the fluid which it is intended shall be absorbed thereby. The said outer case of the vaporizer-casing is also preferably constructed from metal with plain sides, as shown, and is indicated in the drawings by H. Said outer casing is telescopically applied over the said inner casing *b*, as shown in Figs. 1 and 2, and is frictionally adjusted on the inner casing, so that it can be drawn up and down thereon, and will, by frictional contact with the inner case, remain in such position as it may be moved to thereon. Said outer casing H has a top 15, provided with perforations *v*, and has attached to its inner side by a turning-knob *w* a perforated gate 16, having perforations therein corresponding to those in said top 15, and by turning said gate 16 the perforations through the same and said top may be brought into coincidence, thereby forming openings for the escape of the said vaporized air from the vaporizer, or the perforations in the top of the outer casing may be wholly or partially closed by turning said gate to other positions. Said outer casing H being placed over the inner casing *b*, as aforesaid, conduces to the formation of vertical air-passages *y* between the inner and outer casings, as shown in Figs. 3 and 4.

In the manipulation of the within-described vaporizer for the dissemination of the vapors of volatile fluids for disinfecting or perfuming purposes, said fluid is placed within the chamber 7 of the vaporizer, and, as aforesaid, is taken up by said absorbent pad 14 and thereby conveyed to the base of the absorbent cast A, and the latter soon becomes fully charged with said fluids. To produce the vapors of said fluids, or, in other words, to set said vapors free in a room where said vaporizer may be placed, the outer casing H is raised more or less above the base 9 of the inner casing, thereby allowing air to pass in to the passages *y* between the outer and inner casings, and thence through the perforations 6 in the sides of the inner casing into contact with the surface of the said absorbent A, and thence upward to the top of the outer casing and also directly upward under said top through said passages *y*, and out of said casing through the openings *v* therein, as indicated by the arrows in Fig. 1. The degree of the elevation of said outer casing determines the volume of air which may be allowed to circulate through the vaporizer, said air thereby becoming thoroughly charged with the vapors of the fluid contained by said porous absorbent A.

Fig. 5 illustrates a porous cast or absorbent A, of a different form to that shown in Fig. 4 and above described, the form shown in Fig. 5 being substantially of a star shape in end view and like the cast shown in Fig. 4. That in Fig. 5 comprises a solid central portion D, laterally-projecting ribs *o*, and chambers *x* between said ribs, having the requisite vaporizing-walls. The said form of cast shown in said last-named figure may be substituted for that shown in Fig. 4, but with less advantage as to vaporizing capabilities.

I have hereinabove made description of, and the accompanying drawings illustrate, certain features of construction which constitute the subject-matter of claims made by me in another application for Letters Patent of the United States filed simultaneously herewith under Serial No. 332,008, and this invention, as defined by the claims hereinafter, relates to improvements which are independent of those claimed in my other application; but said present improvements generally relate to the same class of vaporizers as do the improvements in said other application.

What I claim as my invention is—

1. A vaporizer consisting of an absorbent body, substantially as described, having a solid central portion, from the sides of which extend laterally a series of ribs separated from each other, thereby forming therebetween a series of chambers having evaporating-walls, combined with a case having cor-

rugated walls and air-passages therethrough which inclose said absorbent body, and a fluid-receiving chamber therein in communication with said absorbent body, and an outer case fitted telescopically over said corrugated case having openings in the top thereof for the escape of vapors, substantially as set forth.

2. A vaporizer consisting of a corrugated case having air-passages therethrough and a chamber therein for volatile fluids, a pad-support located in said fluid-chamber, a porous pad resting on said support, an absorbent porous body, substantially as described, contained in said case and in contact with said pad, and an outer case fitted telescopically over said corrugated case having openings in the top thereof for the escape of vapors, substantially as set forth.

3. A vaporizer-case consisting of an inner case having corrugated walls, a fluid-receiving chamber therein, a laterally-extending flange around its bottom having a flexible washer thereon, an outer case telescopically fitted on said inner case and movable thereon toward and from said flange, having a top with perforations therethrough, and a perforated gate attached to said top to vary the area of the perforations therein, combined with a porous body, substantially as described, contained in said inner case and absorbing fluid from said chamber and giving off vapors thereof from its surface, substantially as set forth.

4. In combination with the porous absorbent body A, having the ribs 3 and the chambers 5, the corrugated case *b*, having a fluid-chamber therein, and inwardly-projecting ribs opposite the edges of said ribs 3, whereby the grooves in said case opposite the chambers 5 and said chambers form conjointly the air-passages *e*, extending from the bottom of said case upward, substantially as set forth.

5. In combination with the porous absorbent body A, having the ribs 3 and the chambers 5, the corrugated case *b*, having a fluid-chamber therein, and inwardly-projecting ribs opposite the edges of said ribs 3, whereby the grooves in said case opposite the chambers 5 and said chambers form conjointly the air-passages *e*, extending from the bottom of said case upward, a tube 8 in said case *b*, connecting with said fluid-chamber, an outer case H, sliding on said case *b*, having perforations in its top, and the perforated rotating gate 16, operating in conjunction with said perforated top to vary the areas of the perforations therein, substantially as set forth.

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