

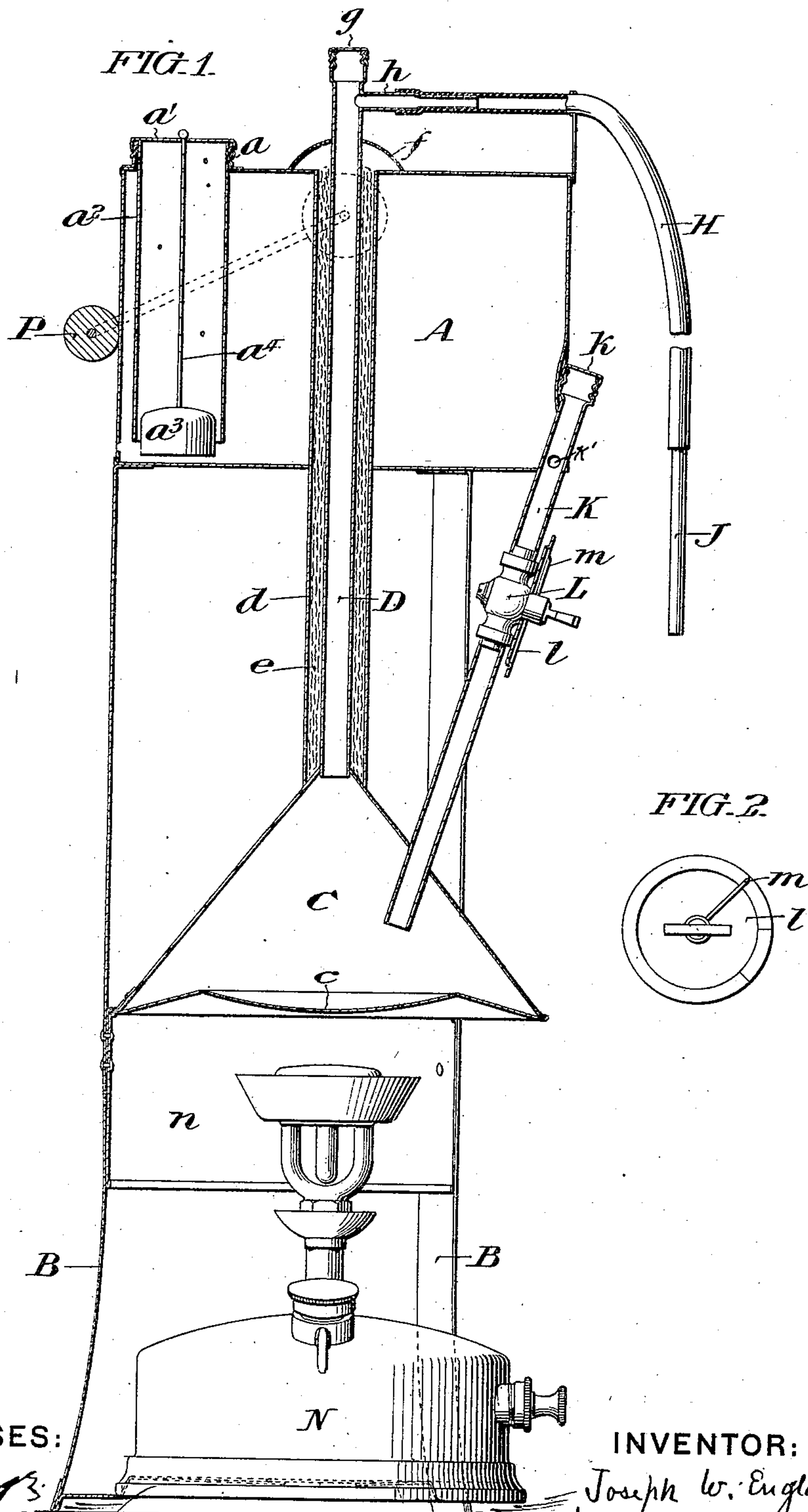
No. 711,720.

Patented Oct. 21, 1902.

J. W. ENGLAND.
FORMALDEHYDE VAPORIZER.

(Application filed June 19, 1902.)

(No Model.)



WITNESSES:

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UNITED STATES PATENT OFFICE.

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FORMALDEHYDE-VAPORIZER.

SPECIFICATION forming part of Letters Patent No. 711,720, dated October 21, 1902.

Application filed June 19, 1902. Serial No. 112,274. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH W. ENGLAND, a citizen of the United States, residing at No. 415 North Thirty-third street, in the city and county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Formaldehyde-Vaporizers, of which the following is a specification, reference being had to the accompanying drawings.

My invention relates to a vaporizer by means of which formaldehyde gas may be produced from an ordinary aqueous solution thereof. In general such apparatus consists of a suitable receptacle for the formaldehyde solution, a suitable vaporizing-chamber separate therefrom, means for conducting the solution from its receptacle to the vaporizing-chamber in a very thin stream subject at all times to proper regulation, and means for freely conducting the formaldehyde gas as it is liberated in the vaporizing-chamber to the point where it is desired to use it as a disinfectant or otherwise. My improvements relate to all of these parts, and more particularly to the form of the vaporizing-chamber for allowing the free and unobstructed formation and outflow of the formaldehyde gas therefrom.

In the accompanying drawings, Figure 1 represents an apparatus embodying my improvements, shown chiefly in vertical section. Fig. 2 is a detail of the dial-plate employed in connection with the valve L.

A is a reservoir for the formaldehyde solution. In shape it is a cylindrical annulus. Near one side its top is provided with an opening a , closed by a screw-cap a' , to the under side of which is attached a vertical guiding-cylinder a^2 , within which is a float a^3 , carrying a rod a^4 , which projects upward through the top of the cylinder, its side being graduated so as to indicate the height of the float, and therefore of the solution in the reservoir. The entire cylinder a^2 , with its float, may be removed by unscrewing the cap a' , thereby disclosing the aperture a , through which the reservoir is cleaned or filled. The reservoir is supported at a suitable height by legs B B, of which there are three, two only

appearing in the drawings. Considerably below the reservoir A the vaporizing-chamber C is supported by the legs B B. This chamber is formed with a bottom c of the shape indicated in the drawings—that is to say, with a central depression or bowl and an outwardly-sloping ledge surrounding the bowl. The rest of the vaporizing-chamber is in the form of an inverted funnel communicating at its apex with an exit-tube D, which leads from it directly through the center of the reservoir A. The internal wall of the annular reservoir is carried downward at d until it reaches the top of the vaporizing-chamber, and the space between this wall d and the tube D is filled with an asbestos or other non-heat-conducting packing e , thereby protecting the solution in the reservoir A from the heating effect of the tube D, which passes through it. The asbestos-packed chamber thus formed is open at the top and covered by a wire-gauze f . The exit-tube D extends upward a short distance above the top of the reservoir A and terminates in a screw-cap g , by the removal of which it may be readily cleaned. Near the top of the tube D a shoulder h is formed, to which a suitable length of rubber tube H is fitted, terminating in a nozzle J, which for ordinary usage should be capable of fitting into the keyhole of a room.

Near one of the lower corners of the reservoir A there is fitted a slanting inlet-tube K, which passes down and in through the side of the vaporizing-chamber, terminating therein a short distance above and nearly over the center of the bowl-shaped portion of the bottom of that chamber. Near its upper end the inlet-tube K communicates with the reservoir A by means of the opening k' . The top of the inlet-tube extends upward until it clears the side of the reservoir A, terminating in a screw-cap k , through which it may be cleaned. L is a valve fitted into this tube. It is surrounded by a dial-plate l , with a finger m attached to the valve-stem.

N is a lamp suitably mounted below the vaporizing-chamber and having its burner at the proper distance to heat the same to the best advantage.

n is a shield surrounding the burner of the

lamp to protect its flame from drafts. This shield is preferably more or less cut away on one side, so as to permit ready access to and observation of the burner.

5 P is a swinging handle fastened to the sides of the reservoir A, by which the entire apparatus (which, it will be noted, although very strong is very lightly constructed) may be readily carried about by hand.

10 The operation of my device is as follows: The reservoir A is filled by means of the opening *a* with formaldehyde solution, and the burner of the lamp N is lighted. As the vaporizing-chamber becomes heated the valve
15 L is gradually opened until the index-finger *m* reaches a mark made on the dial-plate which indicates that position of the valve which will allow a very fine stream of the solution to run down and fall almost centrally
20 upon the bottom of the vaporizing-chamber, where the heat immediately volatilizes it, whereupon the vapor, carrying with it the formaldehyde gas thus generated, passes directly upward through the tube D, from
25 whence it is led to the place where it is desired by the rubber tube H, the passage of the vapor from the vaporizing-chamber being as nearly unobstructed as possible. By observing the fall of the float, as indicated upon
30 the graduated rod, it can at any time be ascertained just how much of the solution which was placed within the receptacle has been vaporized, and from this can be readily calculated the precise quantity of gas which has
35 been generated. In this way the operation can be allowed to proceed until enough gas has been generated to disinfect the room with which the apparatus is connected, (of which the cubic contents should be calculated beforehand,) and thereupon the lamp extinguished,
40 the valve closed, and the vaporization brought to an end.

Having thus described my invention, I claim—

45 1. In a formaldehyde-vaporizer, the combination of a cylindrical annular reservoir with its supports; a vaporizing-chamber formed in the shape of an inverted funnel and terminating in an exit-tube which passes up through
50 the center of the annular reservoir; flexible connections from the top of this tube; a burner below the vaporizing-chamber; an inlet-tube passing obliquely from the bottom of the reservoir into the vaporizing-chamber and terminating therein near its center; and means
55 for regulating the flow of liquid through the tube, substantially as described.

2. In a formaldehyde-vaporizer, the combination of a cylindrical annular reservoir; a vaporizing-chamber beneath the same; an inlet-tube passing from the reservoir to the vaporizing-chamber; an exit-tube passing from the top of the vaporizing-chamber through the center of the annular reservoir; and a non-heat-conducting packing surrounding the exit-tube and protecting the reservoir from its heat, substantially as described. 60 65

3. In a formaldehyde-vaporizer, the combination of a reservoir; a vaporizing-chamber with a rounded imperforate bottom; an inlet-tube leading from the reservoir into the vaporizing-chamber directing its stream upon the rounded bottom thereof; an exhaust-tube leading from the vaporizing-chamber; and means for heating the bottom of the vaporizing-chamber, substantially as described. 70 75

4. In a formaldehyde-vaporizer, the combination of a reservoir; a vaporizing-chamber; an exit-tube for the vaporizing-chamber; an inlet-tube connecting the reservoir with the vaporizing-chamber; a valve interposed within said tube; a finger upon the valve-stem; and a graduated dial surrounding same, substantially as described. 80

5. In a formaldehyde-vaporizer, the combination of a reservoir; a vaporizing-chamber; an inlet and exit tube therefor; an aperture in the top of the reservoir closed by a screw-cap; a guiding-cylinder fixed to the bottom of the screw-cap; a float within the guiding-cylinder; and a graduated rod affixed to the float and projecting through a hole in the screw-cap, substantially as described. 85 90

6. In a formaldehyde-vaporizer, the combination of a cylindrical annular reservoir; a vaporizing-chamber directly below the same; an exit-tube passing from the top of the vaporizing-chamber through the center of the reservoir and terminating thereabove in a screw-cap whereby it may be cleaned; and an inlet-tube passing obliquely from one of the lower corners of the reservoir into the vaporizing-chamber and formed with a projecting upper end fitted with a screw-cap whereby it also may be cleaned, substantially as described. 95 100 105

In witness whereof I have hereunto signed my name with two subscribing witnesses this 16th day of June, A. D. 1902.

JOSEPH W. ENGLAND.

Witnesses:

JAMES H. BELL,
E. REESE.