No. 676,814. Patented June 18, 1901.

L. FEVAL.

FORMALDEHYDE FUMIGATOR.

(Application filed Apr. 27, 1900.)

(Model.)

Fig. 1

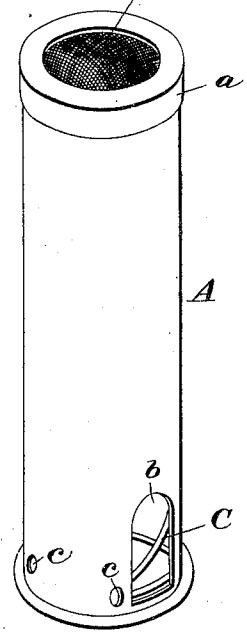
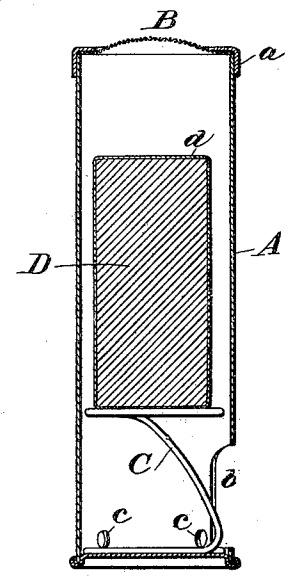


Fig. 2



Witnesses:

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Att'ys.

UNITED STATES PATENT OFFICE.

LEON FEVAL, OF NEW BRUNSWICK, NEW JERSEY, ASSIGNOR TO E. D. TAYLOR COMPANY, OF SAME PLACE.

FORMALDEHYDE FUMIGATOR.

SPECIFICATION forming part of Letters Patent No. 676,814, dated June 18, 1901.

Application filed April 27, 1900. Serial No. 14,550. (Model.)

To all whom it may concern:

Be it known that I, LEON FEVAL, a citizen of the Republic of France, residing in the city of New Brunswick, county of Middlesex, and State of New Jersey, have invented a certain new and useful Improvement in Fumigators, of which the following is a specification.

The object I have in view is to produce a simple and safe apparatus especially designed for the production of formaldehyde gas for use for all commercial, technical, and scientific purposes, and particularly for the disinfection of houses, rooms, &c., and for the sterilization of antiseptic goods of all kinds, surgical instruments, and the like. For this purpose I use any solid which on being heated will give off formaldehyde gas, such as the polymers of formaldehyde—viz., paraformaldehyde $(CH_2O)_2$ and trioxymethylene $(CH_2O)_3$, or both. I mold the material into a candle of suitable form and inclose it in a confined space formed by a shell of incombustible material, such as metal or asbestos, which shell is open at the bottom, so that the candle may be lighted at its lower end and will be furnished with sufficient oxygen to maintain combustion at that point. The top of the shell above the candle has an opening closed by wire-gauze, which prevents the ignition of the formaldehyde gas which is given off from the top of the candle or from such surface space as is not covered by the flame. Paraformaldehyde and trioxymethylene are combustible, and hence it is not necessary to provide the candle with a wick. The heat produced by the combustion of a very small part of the candle, confined in contact with the sides of the candle by means of the inclosing shell, is sufficient to volatilize the remaining part. In order to prevent evaporation and wasting of the candle prior to its use, I dip the candle in paraffin, so as to cover its surface with a sufficient coating to prevent evaporation. A small portion of the candle—as, for instance, its upper end—may be left uncoated, if desired, to enable the user to detect the odor of formaldehyde. It is obvious that this coating, while preferably paraffin, may be any other suitable hydrocarbon or other material which is stable under normal atmospheric conditions, but will be vaporized by the heat produced by burning the candle.

While I prefer to mold the candle entirely from the paraformaldehyde or trioxymethylene, or both, yet it is obvious that the material may be adulterated to some extent with material which is either combustible or incombustible.

In the accompanying drawings, Figure 1 is a view in perspective of the fumigator, and Fig. 2 is a vertical section of the same.

A is a cylindrical box or container of incombustible material, preferably metal, and provided at its upper end with a cap *a*, which has an open center, in which is inserted wire-gauze B. At the lower end of the shell A there is provided an opening *b* to permit a lighted match to be introduced into the shell. This opening *b* also supplies air to the bottom of the shell for supporting combustion, and additional holes *c* may also be provided for this latter purpose. In the bottom of the shell is placed a twisted wire C, forming a support for maintaining the candle above the bottom of the shell. The candle D is preferably made of molded paraformaldehyde or trioxymethylene, or both, as already described, with or without some admixture of other material, and is provided with a coating *d* of paraffin or other suitable material to prevent evaporation under normal atmospheric conditions.

The candle D is placed in the shell by removing the cap *a* and rests at its lower end upon the wire support C. The candle does not completely fill the shell. The cap being replaced on the upper end of the shell, the fumigator is used by lighting the lower end of the candle through the space *b*. The candle burns at its lower end and more or less upon the sides, the heated products of combustion being maintained in contact with the sides of the candle by the inclosing shell; but the wire-gauze prevents the ignition of the formaldehyde gas which is given off at the top of the candle. This gas escapes through the wire-gauze and is effective for use for any of the purposes mentioned.

What I claim is—

1. An apparatus for generating formalde-

hyde gas, wherein are combined a solid body from which formaldehyde gas is driven off by the heat produced by the combustion of a portion of said body, and a container for restricting the combustion to a portion of said body, substantially as set forth.

2. An apparatus for generating formaldehyde gas, wherein are combined a solid body composed wholly or largely of the solid polymers of formaldehyde from which solid body the formaldehyde gas is driven off by the heat produced by the combustion of a portion of said body, and a container for restricting the combustion to a portion of said body so that the formaldehyde gas driven off at other portions of said body will not be ignited, substantially as set forth.

3. An apparatus for generating a gas which is itself combustible from a combustible solid from which the gas may be driven off by heat, wherein are combined a candle composed of said combustible solid, a shell of incombustible material inclosing said candle and provided with an opening or openings for the admission of air at the bottom of said shell, whereby said candle may be lighted at its lower end and the rising heated products of combustion will be kept in contact with the sides of the candle by means of said shell, and a gauze-protected opening at the top of said shell for carrying off the gas therefrom, substantially as set forth.

4. An apparatus for generating formaldehyde gas, wherein are combined a candle composed wholly or largely of the solid polymers of formaldehyde, a shell of incombustible material inclosing said candle, an opening or openings at the lower end of said shell for admitting air to support combustion at the lower end of said candle, said shell keeping the rising heated products of combustion in contact with the sides of the candle, and a gauze-protected opening at the top of said shell for carrying off the formaldehyde gas, substantially as set forth.

This specification signed and witnessed this 25th day of April, 1900.

LEON FEVAL.

Witnesses:
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JOHN R. FERGUSON.