April 5, 1932. C. E. DUNN 1,852,004

WICK FOR HUMIDIFIERS

Filed Nov. 16, 1928

Fig. 1.

Fig. 2.

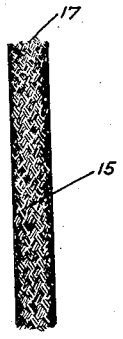


Fig. 3.

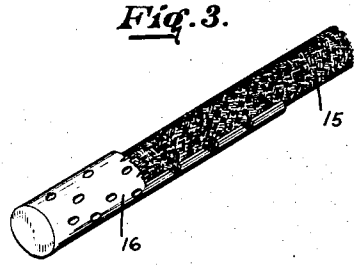


Fig. 4.

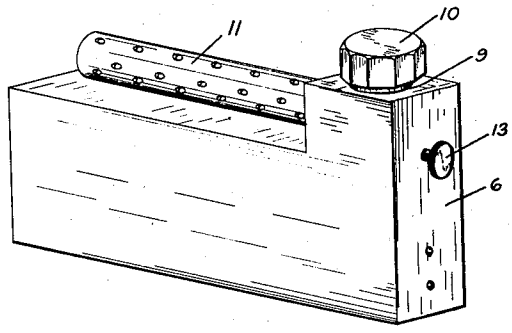
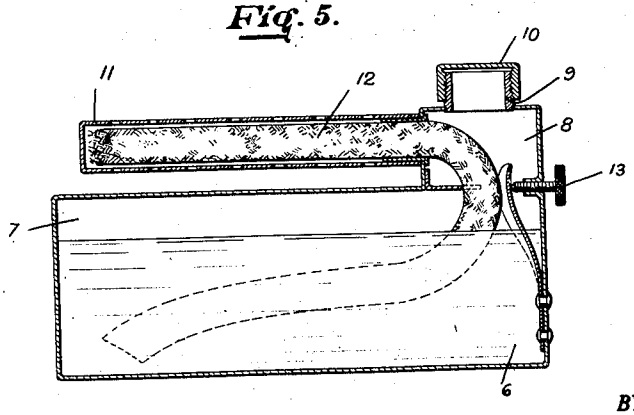


Fig. 5.



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UNITED STATES PATENT OFFICE

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WICK FOR HUMIDIFIERS

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This invention relates to humidifying means and more particularly to a wick or similar agency adapted to withdraw moisture or liquid of desired character from a reservoir and expose it to an absorbing gaseous medium, as air.

The general object of the invention is to produce a wick whose utility is dependent upon capillary attraction and almost complete exposure to an atmosphere; and which will be substantially immune from the ravages of attacking impurities or parasitic phenomena in the medium wherein it is exposed.

A feature of the invention resides in the chemical treatment afforded a wick whereby its utility and physical properties are preserved and prolonged in life, while its character as an absorbent and surface evaporative humidifier remains unaffected.

Wicks generally have long been employed to transfer liquids such as kerosene, especially for heating and lighting purposes. In the main, the greater part of the wick is usually confined in the liquid or in the enclosed area holding the liquid and hence charged with the vapor therefrom. As a result, and because of the nature of its use, only a negligible portion of the wick is exposed to the air, and is rarely affected by deleterious action of organisms found in the atmosphere. Besides, the exposed portion is almost immediately charred after installation, and this reaction serves to immunize the exposed fibres.

Where, however, a wick is used as a humidifier, its function is primarily dependent on exposure to the atmosphere, air usually being employed to absorb the moisture carried by the wick. Instead of a negligible edge being exposed to the air as in lamp wick use or the like, a very considerable body portion must be presented for action by the air. Furthermore, it is desirable for best results that every side of the wick be accessible to the air. In view, also, of the use of water for humidification purposes, the wick is often subject to organisms and attacking impurities therein not found in oils or the like ordinarily employed with wicks. It may be noted that an oleaginous base of itself often imparts protection from deterioration which water, or like liquid, can rarely, if ever, provide.

Thus, it is an object of the invention to provide a wick capable of use in numerous different associations but primarily to be employed in connection with humidifiers and which wick will maintain its shape and not be subject to the attack of organisms.

A further feature resides in the provision of chemical treatment for a humidifier wick which is additionally designed to prevent corrosion of the container supporting the wick, assuming it to be of a substance liable to corrosive action.

Further features covering advantages in application, economy, and utility of the chemical means employed, will be more fully understood from the following description read in connection with the accompanying drawings, in which:

Figure 1 illustrates an untreated wick which has been exposed to deleterious action of micro-organisms in the fluid to which it is subjected, and in the surrounding atmosphere;

Fig. 2 shows a wick treated in accordance with applicant's invention after having been used a length of time as long as the wick of Fig. 1;

Fig. 3 shows a treated wick within a supporting structure, the chemical agency serving to protect the contacting walls of the support from corrosive action;

Fig. 4 is a perspective view of a humidifier in which the wick may be employed, and

Fig. 5 is a cross-section of the device shown in Fig. 4.

Considering all the figures simultaneously similar designations referring to similar parts, numeral 6 generally designates a humidifier having a reservoir portion 7, integral filler extension 8, filler spout 9, and cap 10. As illustrated, a liquid such as water may be fed within the device through spout 9, and the liquid maintained at any desired level. The extension suitably supports a barrel 11 which is perforated at intervals so that the surrounding atmosphere may circulate therethrough. The barrel is shown substantially cylindrical in form but may be

made in any shape and its length adjusted in accordance with the degree of humidification desired.

It should be understood that the device, per se, is merely illustrative of one structure wherein a wick may be used for humidification purposes, it being understood that the structure itself is of no moment and may be designed to suit different requirements or engineering expediency. The form illustrated is merely indicative of one form of structure wherein wicks, in accordance with the invention, may be employed.

Wick 12 is partially immersed within the reservoir and extends within perforated barrel 11. The wick may entirely fill the barrel, or if humidification requirements demand, may only partially extend therein. The degree of humidification will be dependent upon the length of perforated barrel structure and the size as well as length of wick exposed to the atmosphere surrounding the barrel. However, to limit capillary attraction, adjusting screw 13 is shown.

The wick will draw moisture from the reservoir and the moisture will be absorbed by the medium surrounding the barrel. The moisture itself may contain impurities and organisms which will tend to attack the wick which is also subject to action by the air. Oxidation of these impurities, as well as the usual germination processes results in bacteria formations, molds, and resultant growth which attack the wick fibres, cause rot, and, in time, offensive odor. Figure 1 illustrates a rotted condition of a wick 14 used for a period of time in a humidifier of the character described. The action of the air and water resulted in rotting and molding, which necessitated removal of the wick. As is well known, the action of yeast plants in the air, and of vegetation, causes chemical formation and reaction to take place which causes deleterious action and ravaging deterioration.

Since exposure to the air is essential in humidifiers, such as for humidors and the like, and since the use of water for such purposes is well nigh indispensable, applicant provides a treatment for the wick which enables its use at maximum efficiency and with substantial immunity from the defects heretofore encountered. Applicant first immerses his wick in a solution of lead acetate. A 10% solution is found to give good results. The wick is next treated with a solution of alkaline potassium dichromate. As a result, basic lead chromate is formed, the action occurring directly in the wick. The employment of basic lead chromate not only serves to preserve the wick against deterioration from the usual causes, but does not affect the capillary of the wick nor its usual physical characteristics. This process is also designed to protect the barrel from corrosion. The wick may be designed to snugly fit within its supporting structure. As a result the lead chromate is brought in contact with the interior of the support, and effectively prevents corrosion, if the substance is otherwise subjected to corrosive action.

For good results it may be noted that approximately every hundred grams of wick should contain about 10.44 grams of lead, as in the form of lead chromate. For different purposes, small percentages of alcohol extract and ether may be used in the reactions.

As shown in Fig. 3, wick 15 is snug within barrel 16, and since the wick retains its shape and physical qualities, contact will be maintained at all times. The lead solution formed in the wick is substantially uniformly spread throughout the structure and does not affect the physical properties of the fibres nor their evaporative functions or absorbing qualities. In order to aid capillarity, the inside of the wick 17 may be made of soft character of material, whereas the outer cover may be of woven fabric forming an integral unit piece. It is also found that the chemical reaction does not affect the pliability of the wick strands and that their softness remains unimpaired during continuous service and exposure to the effects of the atmosphere and water having the usual impurities.

While applicant produces his result by the reaction specified, it is considered that any chemical changes producing an analogous result and the formation of lead chromate in combination with fibrous material, is within the scope of the invention.

It is to be understood that the following claims are intended to cover all of the generic and specific features of the invention herein described, and all statements of the scope of the invention which, as a matter of language, might be said to fall therebetween.

Having described my invention, what I claim as new and desire to secure by Letters Patent is:

1. The process of immunizing a wick from the deleterious action of micro-organisms consisting in combining lead chromate with the fibres of the wick.

2. A method of treating a wick consisting in immersing the wick in a solution of lead acetate and then treating the wick with an alkaline solution of potassium dichromate.

3. A wick of the character described having approximately ten grams of lead chromate in every one hundred grams of wick.

In testimony whereof I affix my signature.

CLIFFORD E. DUNN.