

J. B. MacKAY.
 DEODORIZING AND DISINFECTING APPARATUS.
 APPLICATION FILED AUG. 28, 1911.

1,012,089.

Patented Dec. 19, 1911.

2 SHEETS-SHEET 1.

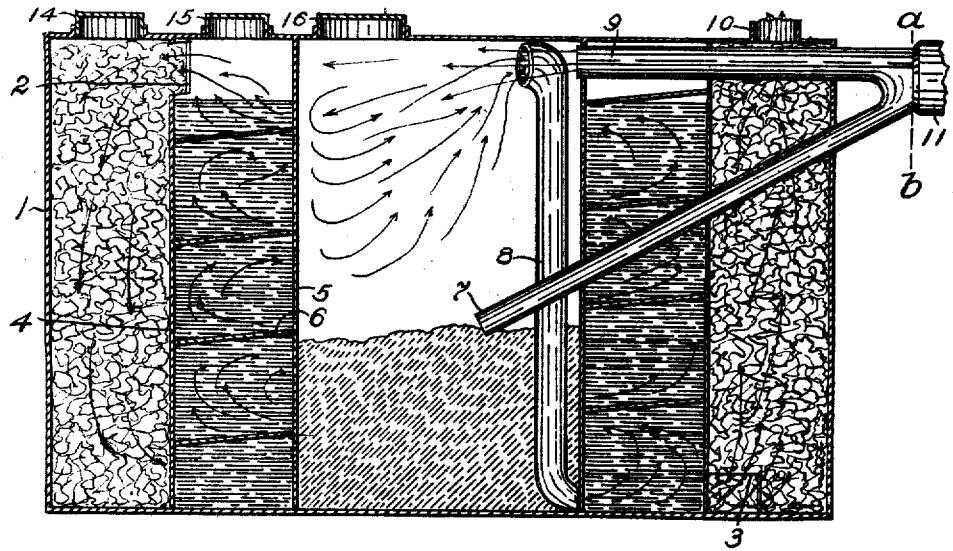


Fig. 1.

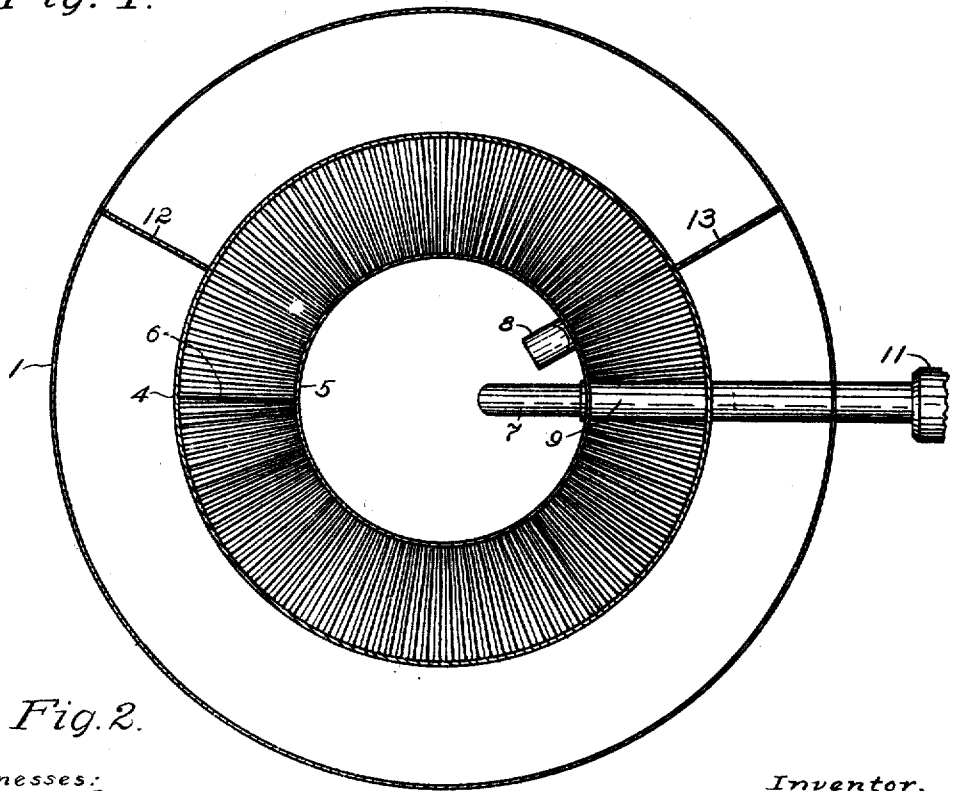


Fig. 2.

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Fig. 3.

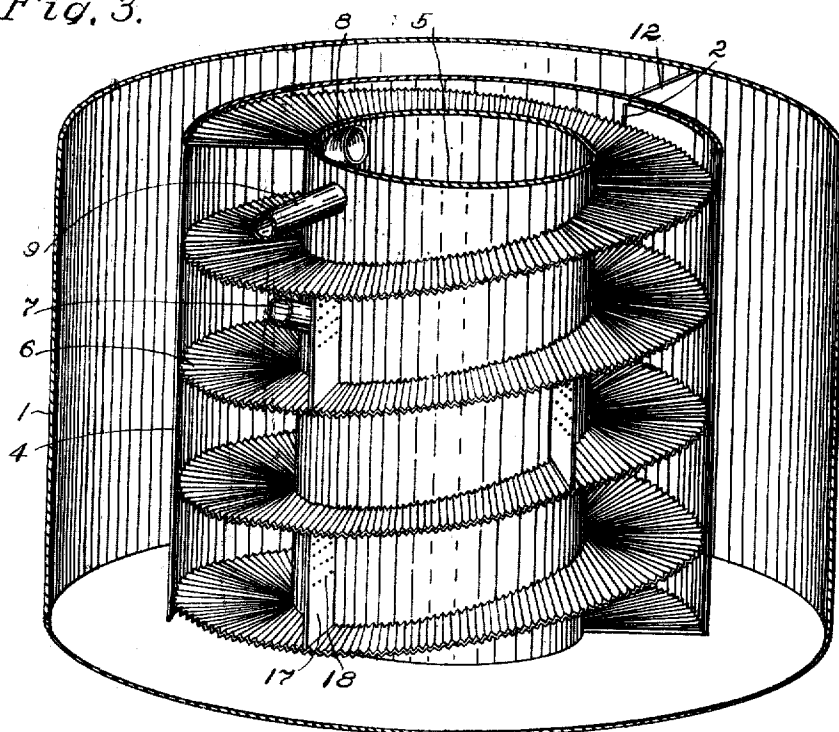


Fig. 4.

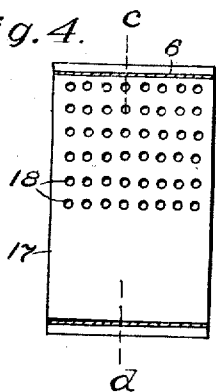


Fig. 5.

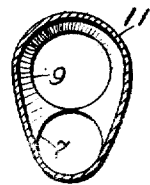
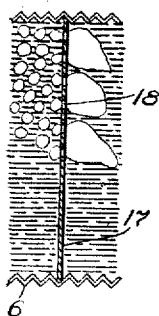


Fig. 6.

Witnesses:

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UNITED STATES PATENT OFFICE.

JOHN BRUCE MACKAY, OF WATERLOO, IOWA.

DEODORIZING AND DISINFECTING APPARATUS

1,012,089.

Specification of Letters Patent.

Patented Dec. 19, 1911.

Application filed August 28, 1911. Serial No. 646,333.

To all whom it may concern:

Be it known that I, JOHN BRUCE MACKAY, a citizen of the United States of America, and a resident of Waterloo, Blackhawk county, Iowa, have invented certain new and useful Improvements in Deodorizing and Disinfecting Apparatus, of which the following is a specification.

My invention relates to improvements in deodorizing and disinfecting apparatus, and the object of my improvement is to furnish an apparatus in which said processes are combined in the same structure, and in which the method of circulating the matter to be acted upon conduces to a more perfect result. This object I have accomplished by the means which are hereinafter described and claimed, and which are illustrated in the accompanying drawings, in which:

Figure 1 is a vertical central section of my improved deodorizing and disinfecting apparatus. Fig. 2 is a plan view of the same with the top cover removed. Fig. 3 is a perspective elevation of said apparatus with the top cover removed, and other parts broken away to better disclose the interior construction. Fig. 4 is an enlarged front elevation of one of the perforated division plates of the helical intermediate chamber, and Fig. 5 is a vertical section of the same, taken on the line *c-d* of Fig. 4. Fig. 6 is a vertical transverse section of the port walls which deliver into the separated gas and liquid seepage conduits, taken on the line *a-b* of Fig. 1.

Similar numerals of reference designate corresponding parts throughout the several views.

My improved apparatus is primarily designed to act upon the liquid seepage and gaseous effluvia of a body in a crypt of a mausoleum, but can be used in the same way on any offensive gases or seepage to both deodorize and disinfect them, before their discharge therefrom.

The device comprises a general receptacle in the form of a hollow cylindrical drum 1 with closed upper and lower ends. The interior of this receptacle or drum is divided by means of cylindrical concentric vertical walls 4 and 5 into three concentric chambers, which respectively serve as depositories for various disinfectants, and which will be more conveniently designated hereinafter as the outermost, intermediate and innermost chambers, 1, 4 and 5 respectively. Covered

manhole ports 14, 15 and 16 in their tops serve for securing access to the interiors of the chambers 1, 4 and 5 respectively, for filling or cleansing same.

The outermost chamber 1 has two vertical separated partitions 12 and 13, of which 12 is imperforate, while the partition 13 has a relatively large opening 3 at the lower end. The chamber 1 has an outlet pipe 10 in its upper end. This chamber 1 is filled with a porous mass of commingled asbestos or mineral wool or similar substance saturated with a solution of formaldehyde or any other suitable disinfecting and deodorizing chemical equivalent.

The innermost chamber 5 has a quantity of chlorid of lime or similar substance deposited therein. The numeral 11 designates the common receptacle adapted to receive both the gaseous emanations and the liquid seepage from the crypt of a mausoleum, or from any other source, and the numerals 7 and 9 respectively designate the conduits which take the liquid and the gaseous constituents from the receptacle 11 and convey them separately through the concentric walls of the apparatus to be delivered into the innermost chamber 5 thereof, the conduit 9 delivering the gas into the top of said chamber, while the conduit 7 is directed obliquely downward to deliver at or below the middle of said chamber into the mass of chlorid of lime therein.

A hollow tube 8 has its open upper end located in the upper part of the chamber 5 to receive the gaseous emanations delivered from the conduit 9, and the lower end of said tube communicates by means of a port with the lower end of the chamber 4.

The numeral 2 designates a relatively large port opening in the wall separating the chambers 1 and 4 at the top. The intermediate chamber 4 is formed by means of a helical partition 6 running from top to bottom thereof, into a helical compartment, the helix itself being radially crimped for a purpose to be hereinafter disclosed. Said helical compartment is further divided into a plurality of communicating parts by means of the vertical division plates 17, which connect the walls 4 and 5 at the sides and the convolutions of the helix above and below. These plates 17 are each provided in their upper parts only with a plurality of small orifices 18. The intermediate chamber 4 is filled to a limit just below the port 2 with

a solution of chlorin. This solution will rise to the same level in the tube 8, until the pressure of gas entering the innermost chamber forces it out of said tube. The gas will then move through the convoluted chamber 4 between the spirals of the crimped helix 6, and finally will be passed through the port 2 into the outermost chamber, and after circulating throughout the porous filling of the latter chamber will thence be discharged outwardly by way of the outlet pipe 10, after traversing the port 3 in the partition 13, since the partitions 12 and 13 serve only as baffle-plates. To retard the passage of the foul gas through the liquid medium in the chamber 4, I have adopted the crimping of the helix 6, since the gas rises and tends to flow forward along the under surface of the helix. This roughened surface tends to hold the gaseous bubbles back while being acted upon by the disinfecting solution, and to a certain extent break them up into smaller bubbles which are more quickly acted upon by the disinfectant. The helix 6 may be arranged with as many convolutions as may be thought necessary to lengthen properly the passage of the gas and delay it within the disinfectant, while it is obvious that the helix may be roughened in any other manner for the purpose outlined above, without departing from the scope of my invention. The division plates 17 further hold back the gas, and as is made clear in Fig. 5, by means of their small orifices 18, break up the larger masses of gas into smaller bubbles. The gas pressure in the apparatus is reduced considerably, which is an important feature, due to the above construction.

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

1. A deodorizing and disinfecting apparatus, comprising three closed concentric chambers, the outermost and intermediate chambers communicating only at the top, the intermediate and innermost chambers having communication at the bottom by means of a tube in communication with the lower part of the intermediate chamber and rising with its upper open end in the upper part of the innermost chamber, said outermost chamber having an outlet at its top, and conduits in communication between said innermost chamber and the exterior of said apparatus.

2. A deodorizing and disinfecting apparatus, comprising three closed concentric chambers, the outermost and intermediate chambers communicating only at the top, the intermediate and innermost chambers having communication at the bottom by means of a tube in communication with the lower part of the intermediate chamber and rising with its upper open end in the upper

part of the innermost chamber, said outermost chamber having an outlet at the top, said intermediate chamber being made helical by means of a helical partition connecting its walls, and conduits in communication between said innermost chamber and the exterior of said apparatus.

3. A deodorizing and disinfecting apparatus, comprising three closed concentric chambers, the outermost and intermediate chambers communicating only at the top, the intermediate and innermost chambers having communication at the bottom by means of a tube in communication with the lower part of the intermediate chamber and rising with its upper open end in the upper part of the innermost chamber, said outermost chamber having an outlet at the top, said intermediate chamber being made helical by means of a helical partition connecting its walls, the said helical partition having its under surface roughened, and conduits in communication between said innermost chamber and the exterior of said apparatus.

4. A deodorizing and disinfecting apparatus, comprising three closed concentric chambers, the outermost and intermediate chambers communicating only at the top, the intermediate and innermost chambers having communication at the bottom by means of a tube in communication with the lower part of the intermediate chamber and rising with its upper open end in the upper part of the innermost chamber, said outermost chamber having an outlet at the top, said intermediate chamber being made helical by means of a helical partition connecting its walls, a plurality of perforated division plates connecting the opposite walls of said helical chamber, and conduits in communication between said innermost chamber and the exterior of said apparatus.

5. A deodorizing and disinfecting apparatus, comprising three closed concentric chambers, the outermost and intermediate chambers communicating only at the top, the intermediate and innermost chambers having communication at the bottom by means of a tube in communication with the lower part of the intermediate chamber and rising with its upper open end in the upper part of the innermost chamber, said outermost chamber having an outlet at the top, said intermediate chamber being made helical by means of a helical partition connecting its walls, a plurality of division plates connecting the opposite walls of said helical chamber, said plates having each a plurality of orifices in its upper part only, and conduits in communication between said innermost chamber and the exterior of said apparatus.

6. A deodorizing and disinfecting apparatus, comprising three closed concentric

chambers, the outermost and intermediate chambers communicating only at the top, the intermediate and innermost chambers having communication at the bottom by means of a tube in communication with the lower part of the intermediate chamber and rising with its upper open end in the upper part of the innermost chamber, said outermost chamber having an outlet at its top, vertical baffle-plates dividing said outermost chamber, of which one is imperforate and another has a port at its lower end only, and conduits in communication between said innermost chamber and the exterior of said apparatus.

7. A deodorizing and disinfecting apparatus, comprising a closed receptacle containing disinfecting materials, provided with an outlet at the top, and a Y-coupling adapted to communicate with a vessel containing

both a liquid and a gas to be disinfected, one branch of said coupling receiving the liquid seepage and the other branch the gaseous emanations from said vessel, said Y-coupling being adapted to communicate with said receptacle, one branch of said coupling being both located and delivering below the other branch thereof, the lower branch being adapted to drain the fluids in said vessel into said receptacle and the upper branch to convey the gases generated in said vessel into said receptacle above the outlet of the lower branch.

Signed at Waterloo, Iowa, this 11th day of Aug. 1911.

JOHN BRUCE MacKAY.

Witnesses:

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