M. W. HANKS.

ELECTRICAL VAPORIZING APPARATUS.

APPLICATION FILED AUG. 28, 1915.

1,184,178.

Patented May 23, 1916.

2 SHEETS—SHEET 1.

Fig. 1.

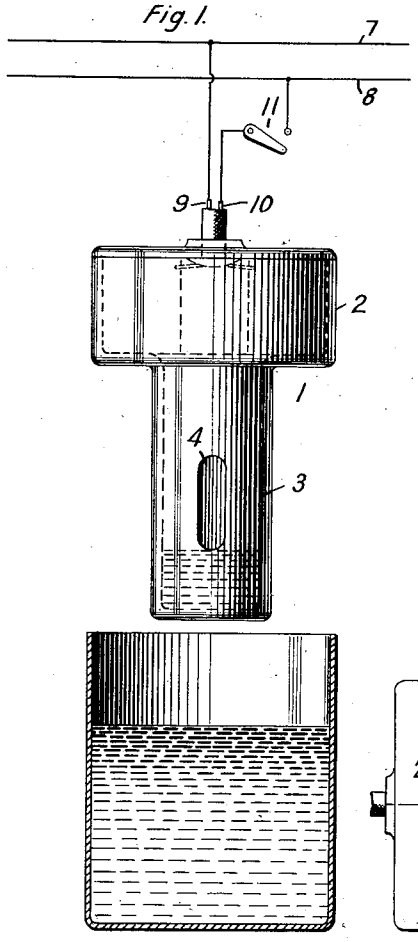


Fig. 2.

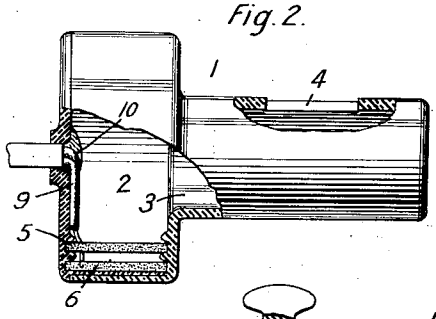


Fig. 3

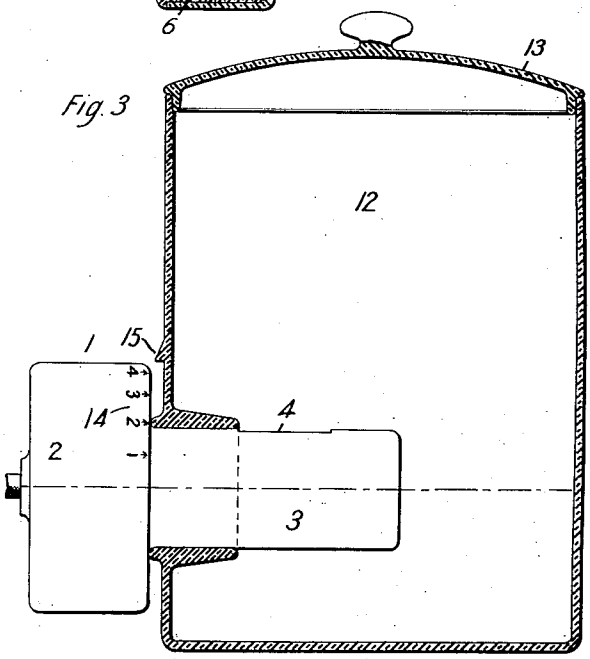


Fig. 4.

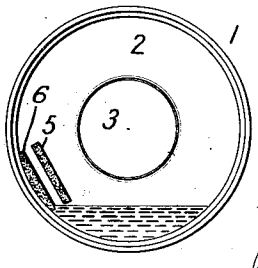


Fig. 5.

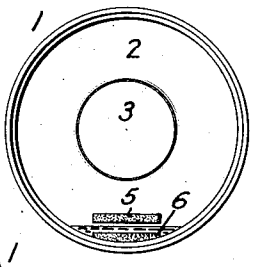
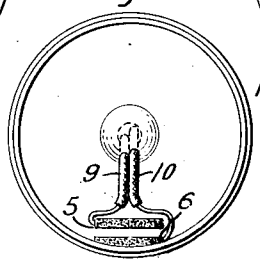


Fig. 6.



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2 SHEETS—SHEET 2.

Fig. 7.

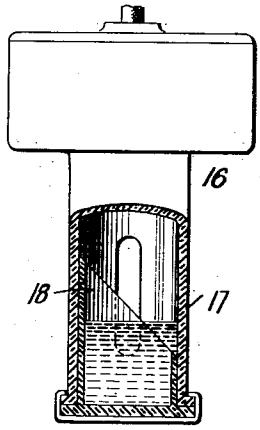


Fig. 8.

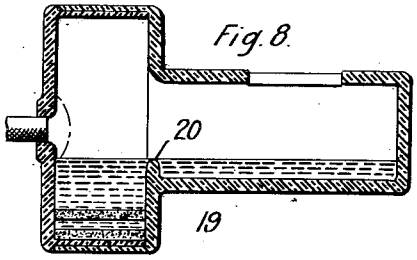


Fig. 9.

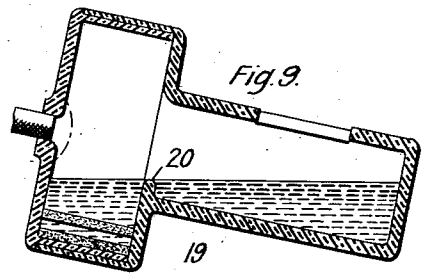


Fig. 10.

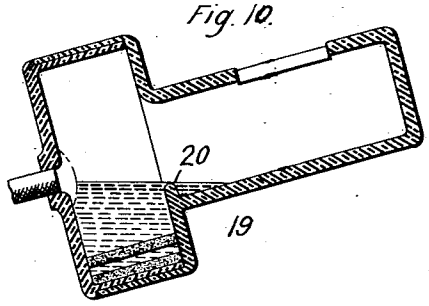
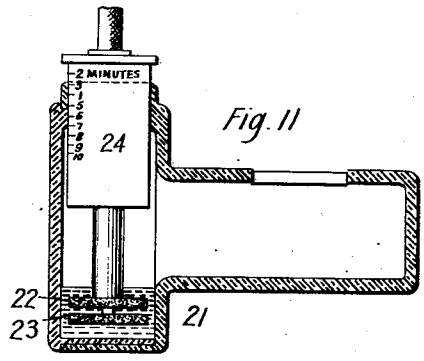


Fig. 11.



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ELECTRICAL VAPORIZING APPARATUS.

1,184,178. Specification of Letters Patent. Patented May 23, 1916.

Application filed August 28, 1915. Serial No. 47,796.

To all whom it may concern:

Be it known that I, MARSHALL W. HANKS, a citizen of the United States, and a resident of Indianapolis, in the county of Marion and State of Indiana, have invented a new and useful Improvement in Electrical Vaporizing Apparatus, of which the following is a specification.

My invention relates to electrical apparatus for vaporizing liquids, and it has for one of its objects to provide a simple, durable and efficient means for vaporizing water for use in cooking food substances or heating any materials or articles to the temperature of the resulting vapor or for producing chemical vapors to be used in coating, bleaching or otherwise treating any article or fabric requiring the application of chemical vapor.

A further object of my invention is to provide a vaporizing apparatus that automatically limits the vaporizing action to a definite time period and that may readily be adjusted to provide any desired vaporization period, throughout a comparatively wide range.

My invention is illustrated in the accompanying drawings in which—

Figure 1 is a side elevational view of my device displaced vertically from its filling position and a cup of liquid in vertical section. Fig. 2 is a partially side elevational and partially sectional view of my device in vaporizing position. Fig. 3 is a side elevational view of my device in operative relation to a receptacle in which articles are to be heated, cooked or otherwise treated and which is shown in vertical section. Figs. 4 and 5 are transverse sectional views of my device in different operative positions. Fig. 6 is a view similar to Fig. 5 but showing the circuit connections to the vaporizing electrodes. Fig. 7 is a view, in filling position and partially in section and partially in elevation, of a modified form of my device. Figs. 8, 9 and 10 are longitudinal sectional views of another modification of my device in different operative positions, and Fig. 11 is a similar view of a further modification.

Referring first to Figs. 1 to 6, inclusive, my vaporizing device 1 consists of a tubular member the ends of which are closed to form a liquid-receiving chamber, here shown as comprising two portions 2 and 3 of different diameters. The chamber portion 3 of smaller diameter has a side opening 4, the distance of the bottom end of which from the closed end of that portion, when the device is in its filling position, determines the amount of liquid which the device is to contain when it is put into operation. The chamber portion 2 of larger diameter contains two spaced electrodes 5 and 6 composed of carbon or some other material that will not be decomposed or disintegrated by electrolytic action and located adjacent to one side of its peripheral wall. The electrodes may be connected to a suitable electrical circuit 7—8 by means of leads 9 and 10, a suitable switch 11 being provided for making and breaking the circuit connection. The device 1 may be used in connection with a receptacle of any desired form or size but, as shown in Fig. 3, its portion of smaller diameter projects into a vessel 12 having a flanged side opening to receive and support the device and provided with a removable cover 13. The amount of liquid vaporized and, consequently, the duration of the vaporizing period may be varied by turning the device 1 upon its axis, as indicated in Figs. 4 and 5. When the device is in the position shown in Fig. 4 the vaporizing period will be of relatively short duration and when it is in the position shown in Fig. 5 such period will be of maximum duration. The device 1 may be provided with a graduated scale 14 and the vessel 12 with an index or pointer 15 or vice versa, if desired, and the graduation may conform to time periods or to any other measurement values that may be desired.

In Fig. 7 is shown a device 16 that conforms generally to the device 1 of the preceding figures except that the portion 17 of smaller diameter is provided with an internal tube 18 that is rotatable and has a beveled inner end so that the amount of liquid retained in the device, after raising it from the body of liquid in which it dipped, may be varied through a comparatively wide range.

In Figs. 8, 9 and 10, the device 19 is provided with a dam 20 between the two chamber portions so that the amount of liquid to be vaporized in the portion of larger diameter may be varied by tilting the device as indicated.

In the device 21 shown in Fig. 11, the electrodes 22 and 23 are mounted upon the inner end of an adjustable member 24 that may be provided with a graduated scale, as indi-

cated, in order to vary the time period of vaporization and to determine with certainty just what such period shall be.

It will be understood that, in the use of my apparatus shown in Figs. 1 to 6, the device 1 will first be dipped in a body of liquid of the kind which it is desired to vaporize, the major axis of the device being substantially vertical. The device will then be turned to a substantially horizontal position and its smaller end inserted into a suitable closed vessel, with the opening 4 in its upper side, as indicated in Fig. 3. The switch 11 being then closed, the heat generated, by reason of the resistance of the water between the electrodes 5 and 6, will convert the liquid into vapor which will pass through the opening 4 into the vessel 12 where it will cook, heat, coat, bleach or otherwise treat the substance or articles located in the vessel. When the level of the liquid is reduced by vaporization to a point below the upper electrode, the flow of current and the consequent vaporization will obviously cease.

The use of the modified devices will be understood without further description.

Many other modifications may, of course, be made by one skilled in the art and I desire, therefore, that all modifications falling within the scope of the appended claims shall be regarded as pertaining to my invention, even though they are not specifically shown and described.

I claim as my invention:

1. A liquid-vaporizing device having two chamber portions, one of which has an aperture to admit liquid and to emit vapor and the other of which is provided with spaced vaporizing electrodes located adjacent to one of its sides and below the level of the bottom of the first named chamber portion when the device is in its operating position.

2. A liquid-vaporizing device having two chamber portions, one of which has a side aperture to admit liquid and to emit vapor and the other of which is provided with a pair of spaced vaporizing electrodes located adjacent to one side thereof and below the level of the bottom side of the first named portion when the device is in its operating position.

3. A two-diameter, tubular vaporizing device having a side aperture, a pair of spaced vaporizing electrodes and means for predetermining the percentage of the contained liquid that shall be vaporized.

4. A tubular liquid-vaporizer comprising two chamber portions of different diameters and a pair of spaced electrodes adjacent to the peripheral wall of the chamber portion having the larger diameter, the peripheral wall of the chamber portion having the smaller diameter being provided with an aperture to admit liquid and to emit vapor.

5. A tubular liquid-vaporizer comprising two chamber portions of different diameters and having a side aperture to admit liquid and to emit vapor, a pair of spaced electrodes, and means for gaging the amount of liquid to be vaporized.

6. A tubular liquid-vaporizer having two chamber portions of different diameters, a pair of spaced electrodes within the larger chamber portion and adjacent to its peripheral wall, and means for gaging the amount of liquid to be vaporized by current passing therethrough between the electrodes.

7. A tubular liquid-vaporizer having a side aperture to admit liquid and to emit vapor and provided with a pair of spaced electrodes so disposed that a vaporization period of any desired length may be secured by rotative movement of the vaporizer.

8. A tubular vaporizer for liquids having a side aperture to admit liquid and to emit vapor and provided with a pair of spaced electrodes, the device being adjustable to vary the amount of liquid that is subjected to the vaporizing action of the electrodes.

9. A tubular vaporizing device having a side aperture to admit liquid and to emit vapor and provided with a pair of spaced electrodes that are adjustable with respect to the body of liquid to be vaporized in order to insure a vaporization period of any desired length.

In testimony whereof, I have hereunto subscribed my name this 23rd day of Aug., 1915.

MARSHALL W. HANKS.

Witnesses:
E. A. DUNLOP,
S. M. PETTIJOHN.