Aug. 18, 1936. M. KATZMAN 2,051,719

ELECTRIC VAPORIZER

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FIG. 1.

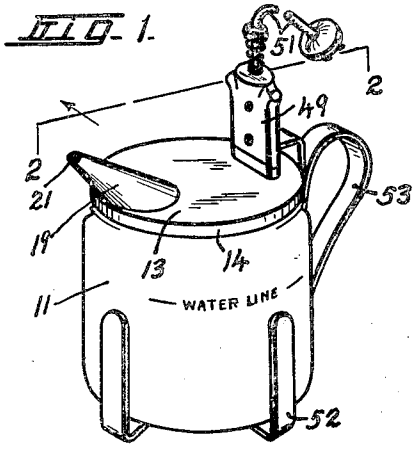


FIG. 2.

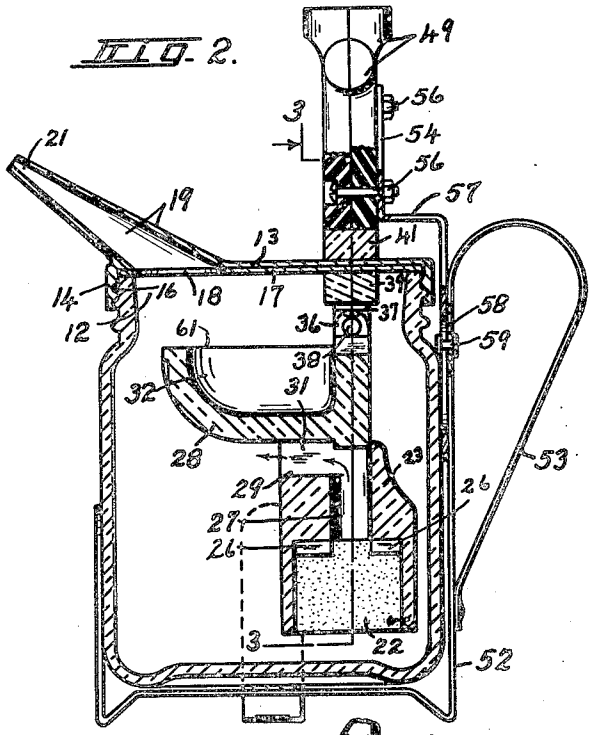


FIG. 3

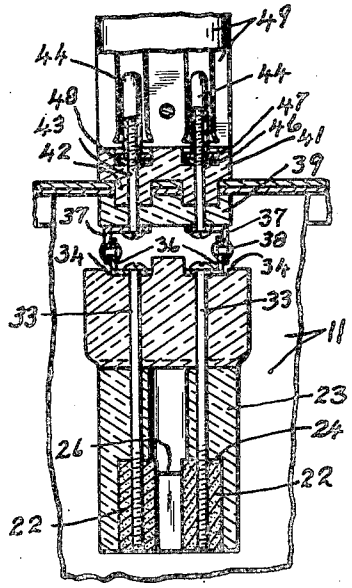
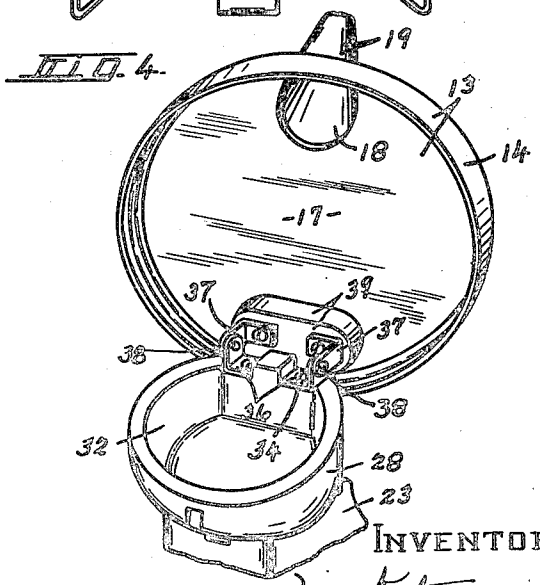


FIG. 4.



WITNESS

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FIG. 5.

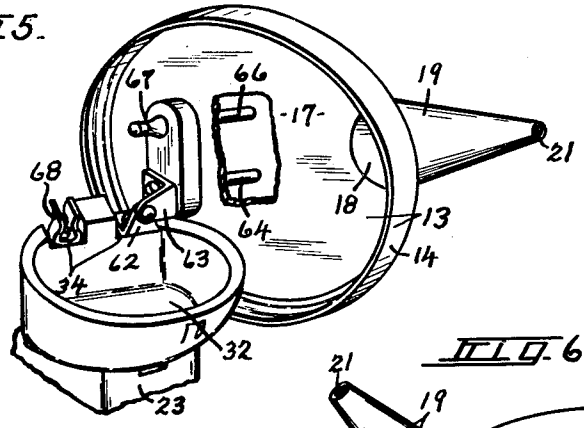


FIG. 6.

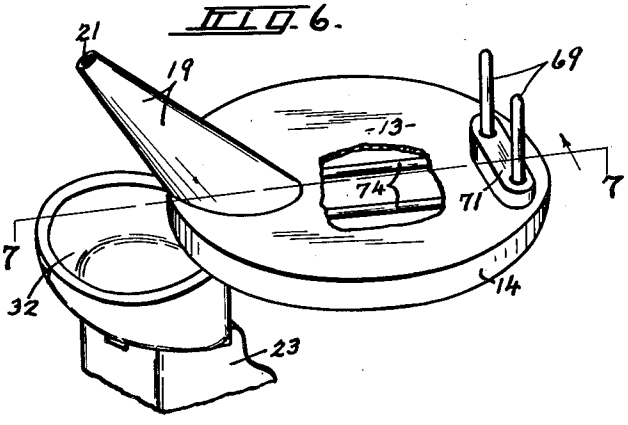


FIG. 9.

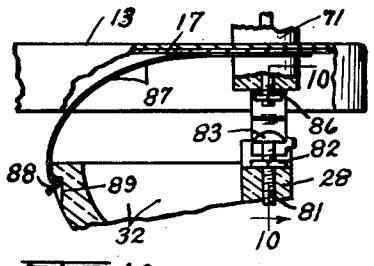


FIG. 10.

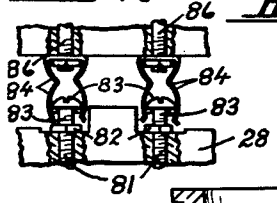


FIG. 7.

FIG. 8.

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2,051,719

ELECTRIC VAPORIZER

Max Katzman, Brooklyn, N. Y.

Application May 7, 1936, Serial No. 78,443

11 Claims. (Cl. 219—38)

This invention relates to electric vaporizers of the class set forth in my Reissue Patent No. 19,368 dated November 6, 1934, original filed January 3, 1928, and is adapted to be used for vaporizing medicated liquids, such as tincture of benzoin, for inhalation by patients for the treatment of respiratory ailments. The vaporizer of this invention is also adapted to be used for vaporizing deodorant or disinfectant liquids and for other purposes which will be obvious.

In the vaporizer shown and described in the above mentioned patent, the electrodes are suspended from the cover and immersed directly in the medicated liquid to be vaporized. Necessarily, in the construction shown in said patent, the electrodes are directly in contact with the medicated liquid. The medicant usually used in vaporizers of this type is of such character that it tends to form a sludge or gummy substance which adheres to the electrodes and impairs their efficiency. Special provision must also be made to, insofar as possible, insure the self-cleaning of the electrodes so that the space between them will not be bridged by the gummy substance so as to short-circuit the electrodes. Moreover, the electrodes, at frequent intervals, must be removed from the jar or container for cleaning.

A further disadvantage of the construction shown in said patent is that when the medicated liquid is in direct contact with the electrodes, a much larger quantity of medicine must be used to obtain the same proportion of medicant in the vapor discharged from the vaporizer.

An object of my invention is, therefore, to provide an electric vaporizer wherein the water or other carrier liquid and the medicated liquid are kept separate, and wherein the medicated liquid does not come in contact with the electrodes.

Another object of my invention is to provide an electric vaporizer so constructed and arranged that the amount of medicated liquid required is reduced to a minimum.

A further object of my invention is the provision of an electric vaporizer in which, although the medicated liquid lies in a separate receptacle out of contact with the electrodes and above the level of the water surrounding the electrodes, the medicated liquid is exposed to the water vapor which, as it passes toward the discharge spout, picks up a certain amount of the medicated liquid and carries it to the discharge spout.

More specifically, my invention contemplates the provision of a vaporizer construction in which the electrodes are suspended from the cover and extend into the water in the vaporizer jar while the receptacle for the medicated liquid lies above the normal water line of the jar and out of contact with the electrodes, said receptacle also being suspended from the cover and lying closely therebeneath, said cover and said receptacle being movable with respect to each other whereby the reecptacle may be readily filled with medicated liquid.

Other objects and advantages of my invention will be more apparent from the following description when taken in connection with the accompanying drawings, in which:

Figure 1 is a perspective view of my electric vaporizer.

Figure 2 is a view taken on the line 2—2 of Figure 1, and showing the parts of my vaporizer in cross section.

Figure 3 is a view taken on the line 3—3 of Figure 2.

Figure 4 is a perspective view showing the means by which the cover of the vaporizer jar is hinged with respect to the receptacle for the medicated liquid, whereby the medicated liquid may be readily poured into the receptacle after the cover has been removed from the vaporizer jar.

Figure 5 is a view of a modified form of the construction shown in Figure 4.

Figure 6 is a view of still another modified means enabling the cover of the vaporizer to be moved with respect to the receptacle for the medicated liquid, whereby the medicated liquid may be readily poured into the receptacle.

Figure 7 is a view taken on the line 7—7 of Figure 6.

Figure 8 is a view, in perspective, showing a portion of Figure 7.

Figure 9 is a view showing another modification of my invention.

Figure 10 is a view taken on the line 10—10 of Figure 9.

As shown in the drawings, the vaporizer comprises a container or jar 11 which may be of any suitable shape although preferably circular in cross section. The jar is preferably of glass or other suitable insulating material and has a relatively large opening 12 at the top thereof adapted to be normally closed by a cap or cover 13. The cover 13 has a down turned flange 14 provided with screw threads adapted to cooperate with threads 16 formed on the upper circumferential edge of the vaporizer jar.

A section of insulating material 17 serving as a gasket is fitted to the underside of the cover

and when the cover is screwed tightly on the vaporizer jar, the cover is in vapor-tight engagement therewith. The gasket 17 has an opening 18 which registers with a discharge spout 19 formed as part of the cover and which has a restricted outlet 21. The restricted outlet 21 and the vapor-tight engagement of the cover with the vaporizer jar enable the creation of a vapor pressure within the jar which cause the vaporized liquid to be discharged from the spout at a pressure and distributed over a wide area in the room in which the vaporizer is used.

The electrode assembly comprises a pair of preferably steel or carbon electrodes 22 which are mounted near the bottom of the vaporizer jar and are held in parallel spaced relation by means of an insulator section 23. The insulator section has a rectangular opening at the bottom for receiving the electrodes, the upper edges of which abut portions 24 of the insulator section 23. The electrodes are entirely surrounded by the insulator section, except for the bottom portions thereof, and the space between the electrodes is open at the bottom to enable access of the liquid in the vaporizer jar to the electrodes.

The abutting portions 24 of the insulator section 23 are provided with depending ribs 26 which lie between the upper edges of the electrodes and hold them rigidly in position against turning. Above the electrodes and in the insulator section 23, a passage 27 is provided which extends upward to a second section of insulating material 28. The upper portion of the insulator section 23 is cut out, as indicated at 29, whereby the bottom surface of the insulator section 28, with the cut out portion 29, forms a passage 31 connecting with the passage 27 for the discharge of the liquid vaporized.

It will be observed that the water or other liquid to be vaporized passes upward between the electrodes, is heated and passes upward through the passages 27 and 31 in the form of a vapor beneath the insulating section 28. The insulating section 28 is formed into a container or receptacle 32 for receiving the medicated liquid to be vaporized. A pair of conductors 33 extend down through the insulator section 28 and through the insulator section 23 and are threaded into the electrodes 22. The conductors retain the electrodes and the two insulator sections in rigid assembled relationship.

Lying in recesses 34, formed in the top of the insulator section 28 and beneath the heads of the conductors 33, are a pair of brackets 36 of conducting material which are held in pivotal or hinged relationship with a second pair of brackets 37 by means of hinge pins 38. On the bottom of the cover is an insulator section 39, and on the top of the cover is an insulator section 41. The insulator section 41 has depending annular portions 42 which extend through apertures formed in the cover and the gasket 17 and lie in recesses formed in the upper portion of the insulator section 39.

A pair of conductors 43 extend upward through the brackets 37, the insulator section 39 and the insulator section 41, and are threaded at their upper ends for the reception of terminals 44. A suitable washer 46 of insulating material and a suitable washer 47 of conducting material are provided in recesses 48 formed in the upper portion of the insulator section 41. The terminals 44 are tightly threaded on the conductors 43 into engagement with the washers. The terminals 44 are adapted to receive an ordinary electric plug 49 which, by a suitable lead 51, may be connected to any source of current.

The vaporizer container or jar is provided with a suitable stand 52 having a handle 53 enabling the vaporizer to be conveniently carried. Means are provided for preventing removal of the cover from the vaporizer jar or removal of the vaporizer jar from the stand 52 until the electric plug 49 has been removed from the terminals 44. This construction insures that the user of the vaporizer will not come in contact with the electrodes while they are connected to a source of current, as access to them cannot be obtained until the cover has been removed, and removal of the cover is prevented while the device is connected to a source of current.

Any suitable means may be provided for preventing such access to the electrodes while the device is connected to a source of current. Such means may be similar to that shown in the above mentioned reissue patent or may be similar to the construction shown herein, wherein a bracket 54 is secured to the electric plug 49 by suitable nut and bolt assemblies 56. The bracket 54 is bent at 57 and is provided at its lower end with an elongated slot 58. A stud 59, provided with suitable heads, extends through the inner loop of the handle 53 and into the elongated slot 58 formed in the bracket 54. When the plug 49 is in engagement with the terminals the cover cannot be turned because of the engagement of the bracket 57 with the plug and the engagement of the plug with the terminals. Moreover, the vaporizer jar cannot be removed from the stand 52 until the plug has been pulled upward out of engagement with the terminals and moved to the side about the stud 59 as a pivot. The upward movement of the plug is permitted by the slotted connection of the bracket 54 to the handle 53 of the stand 52. Pivotal movement of the bracket 54 about the stud 59 is prevented until the plug is free of the terminals. The construction described is essentially the same as that shown in the above mentioned reissue patent except that the construction shown herein is somewhat simplified .

When the device is to be used, the vaporizer jar is filled with water or any other carrier fluid approximately to the water line, indicated in Figure 1, at which point the water line will be somewhat below the upper edge 61 of the medicine receptacle 32. The cover, the medicine receptacle 28 and the electrodes, together with their insulator sections, are one unitary assembly. Before placing the cover on the vaporizer jar, the cover is moved about its pivotal connection with the medicine receptacle 28, as shown more clearly in Figure 4, whereupon the medicated liquid may be readily poured into its receptacle. When the medicated liquid has been placed in the receptacle, the cover is moved back about its hinge connection with the medicine receptacle into superimposed relationship therewith, whereupon the entire assembly may be placed within the vaporizer jar and the cover threaded into vapor-tight engagement therewith. This places the device in condition for use and upon connection to a source of current, the water will be heated. Such connection is obtained by swinging the bracket 54 about the pivot 59 to a position above the terminals 44, and then pushing downward upon the electric plug until it is securely in engagement with the terminals and then connecting the lead 51 to a source of current.

The water between the electrodes is heated to a temperature sufficient to vaporize it. The vapor passes upward through the passages 27 and 31 beneath the medicine receptacle 32, where it occupies the space between the surface of the water and the cover. Due to the fact that the cover is in vapor-tight engagement with the vaporizer jar and the discharge spout 19 has a restricted outlet 21, a pressure of water vapor is created in the upper portion of the vaporizer jar. The medicated liquid in the receptacle 32 is heated and a portion of it is picked up by the water vapor and carried with it out through the discharge spout.

In Figure 5, I have shown a modified form of the construction shown in Figures 1 to 4, inclusive, wherein the cover 13 instead of being pivoted with respect to the medicine receptacle 32 so as to swing rearwardly, is pivoted through conductor brackets 62 and 63 so as to swing sidewardly on the pivot with respect to the medicine receptacle 32. In this construction, the terminal 64 is connected to the bracket 63 while the terminal 66 is connected to a conductor 67 which, when the cover is pivoted to its superimposed position with respect to the medicine receptacle 32, may be snapped between spring elements 68 to form an electrical connection between the terminal 66 and one of the electrodes. The bracket 62 is in electrical connection with the other electrode. The construction thus described constitutes an additional safety feature for preventing the user from obtaining access to the electrodes while the device is in connection with a source of current.

In Figures 6 and 7, I have illustrated another modified form of my construction wherein the terminals 69 extend through insulators 71 and 72 and are bent at 73 forming conductors 74 extending across the underside of the cover 13. At their ends, the conductors 74 extend into apertures 75 formed in conducting elements 76, one of which is shown in perspective in Figure 8. Conductors 77 extend through the electrodes 22 and through the insulator sections 23 and 28 and are threaded into the conducting elements 76, thereby holding the structure in rigid assembled relationship. When the assembly is removed from the vaporizer jar and it is desired to pour medicinal liquid into the receptacle, the cover is pulled sidewardly in the same plane. The conductors 74 are pulled through the apertures in the conducting elements 76 until the cover is in the position shown in Figure 7, in which position the medicinal liquid may be conveniently poured into the receptacle 32. When the medicine is in the receptacle, the conductors 74 may be pushed through the apertures in the conducting elements 76 until the cover is spaced over the medicine receptacle 32 in the desired position, whereupon the cover may be screwed on the vaporizer jar.

In Figures 9 and 10, I have illustrated another modified form of my invention wherein the medicine receptacle 32, together with the electrodes and their surrounding casing of insulating material, are completely separable from the cover 13 to enable medicine to be conveniently poured into the medicine receptacle. In this construction, threaded conductors 81 extend down through the insulator section 28 and retain the electrodes and the insulator section 23 (not shown) in assembled relationship. Nuts 82 on the conductors enable the parts to be held in rigid assembled relationship. The heads 83 of the conductors 81 project above the nuts 82 and are adapted to receive a pair of conducting spring elements 84 which are connected to the terminals on the cover through conductors 86. A spring element 87 is secured to the cover in any suitable manner and has a bent portion 88 adapted to be received in a notch 89 formed on the outside of the medicine receptacle.

When the medicine receptacle is to be filled, after the plug has been disengaged from the terminals and the cover unscrewed from the vaporizer jar, the cover may be separated from the medicine receptacle by holding on to the medicine receptacle and pulling upward on the cover, which will disengage the spring elements 84 from the heads 83 of the conductors and disengage the bent portion 88 of the spring element 87 from the notch 89. Medicine may then be conveniently poured into the medicine receptacle. After the medicine receptacle has been filled, the vaporizer may be reassembled.

While I have described the preferred form of my invention and have shown various modifications thereof, it will be apparent that various modifications and changes in the form and relation of parts may be made without departing from the spirit of my invention as set forth in the appended claims. In the claims, because the vaporizer is primarily used for vaporizing a medicinal liquid, I have used the expression "medicine" or "medicinal liquid" but it will be understood that I intend the words in a broad sense as including a liquid suitable for deodorizing, disinfecting or other analogous purposes.

I claim:

1. In an electric vaporizer, a vaporizer jar, a cover in vapor-tight engagement with the receptacle, and a medicinal receptacle suspended from the cover, said cover and medicinal receptacle lying in superimposed relationship and being pivotally connected together whereby the cover may be moved from said position to enable access to the receptacle.

2. In an electric vaporizer, a vaporizer jar, a cover in vapor-tight engagement with the jar, said cover having a discharge opening, a pair of terminals on the cover and a pair of electrodes suspended from the cover, extending into the water in the vaporizer jar, and being in electrical connection with the terminals on the cover, a receptacle for medicine carried by the cover and lying above the surface of the water, said receptacle and said cover being pivotally connected together whereby the cover may be moved from a superimposed relation with the receptacle to enable convenient pouring of medicine into the receptacle.

3. In an electric vaporizer, a vaporizer jar, a cover in vapor-tight engagement with the jar, said cover having a discharge opening, a pair of terminals on the cover and a pair of electrodes suspended from the cover, extending into the water in the vaporizer jar, and being in electrical connection with the terminals on the cover, a receptacle for medicine lying above the surface of the water, the electrical connection of the terminals to the electrodes including conductors supporting said receptacle and slidable with respect to each other whereby the cover may be moved from a superimposed position with respect to the receptacle to enable convenient pouring of medicine into the receptacle.

4. In an electric vaporizer, a vaporizer jar for containing water, a cover in vapor-tight engagement with the vaporizer jar, said cover having a discharge opening, a pair of electrodes suspended

from the cover and a medicine receptacle rigidly assembled with relation to said electrodes, said medicine receptacle lying beneath said cover, terminals on the cover and conducting means between said terminals and said electrodes for conducting current thereto, and a separable connection in said conducting means enabling the cover and the medicine receptacle to be separated from each other.

5. In an electric vaporizer, a vaporizer jar for containing a liquid, a cover for the jar, a discharge spout extending from the cover, terminals on the cover adapted to receive an electric plug connected to a source of current, electrodes suspended from the cover and extending into the liquid in the jar, conductors between said terminals and said electrodes, and a receptacle for medicine suspended from the cover above the liquid level in the vaporizer jar and having its upper edge spaced from the cover to enable access to the medicine receptacle after removal of the cover from the jar but without separation of the medicine receptacle from the cover.

6. In an electric vaporizer, a vaporizer jar for containing liquid, a cover for the jar, a discharge spout extending from the cover, terminals on the cover adapted to receive an electric plug connected to a source of current, electrodes suspended from the cover and extending into the liquid in the jar, conducting means between said terminals and said electrodes, and a receptacle for medicine suspended from the cover above the liquid in the jar by said conducting means and having its upper edge spaced from the cover to enable access to the medicine receptacle after removal of the cover from the jar but without separation of the medicine receptacle from the cover.

7. In an electric vaporizer, a vaporizer jar for containing liquid, a cover for the jar, a discharge spout extending from the cover, terminals on the cover adapted to receive an electric plug connected to a source of current, electrodes suspended from the cover and extending into the liquid in the jar, conducting means between said cover and said electrodes, and a receptacle for medicine suspended from the cover through said conducting means, said conducting means having pivot means associated therewith enabling the cover to be pivoted with respect to the medicine receptacle to enable access to the medicine receptacle upon removal of the cover from the jar.

8. In an electric vaporizer, a vaporizer jar for containing liquid, a cover for the jar, a discharge spout extending from the cover, terminals on the cover adapted to receive an electric plug connected to a source of current, electrodes suspended from the cover and extending into the liquid in the jar, conductors between said terminals and said electrodes, and a receptacle for medicine, said receptacle being suspended above the level of the liquid in the jar in pivotal relationship with the cover to enable access to the medicine receptacle upon removal of the cover from the jar.

9. In an electric vaporizer, a vaporizer jar for containing liquid, a cover for the jar, a discharge spout extending from the cover, terminals on the cover adapted to receive an electric plug connected to a source of current, electrodes suspended from the cover and extending into the liquid in the jar, conductors between said terminals and said electrodes, and a receptacle for medicine suspended from the cover through said conductors above the level of the liquid in the jar, said receptacle being held in rigid relationship with said electrodes by said conductors whereby the complete assembly of conductors, medicine receptacle and terminals may be removed from the jar as a unit upon removal of said cover.

10. In an electric vaporizer, a vaporizer jar for containing liquid, a cover for the jar, a discharge spout extending from the cover, terminals on the cover adapted to receive an electric plug connected to a source of current, electrodes suspended from the cover and extending into the liquid in the jar, conductors between said terminals and said electrodes, a receptacle for medicine suspended from the cover through said conductors above the liquid level in the jar, said receptacle being held in rigid relationship with said electrodes by said conductors whereby the complete assembly of conductors, medicine receptacle and terminals may be removed as a unit from the jar upon removal of said cover, and means in connection with said conductors enabling the cover upon removal of the cover from the jar to be moved with respect to the medicine receptacle to enable convenient access thereto.

11. In an electric vaporizer, a vaporizer jar for containing liquid, a cover for the jar, a discharge spout extending from the cover, terminals on the cover adapted to receive an electric plug connected to a source of current, electrodes suspended from the cover and extending into the liquid in the jar, conductors between said terminals and said electrodes, a receptacle for medicine suspended from the cover through said conductors, said receptacle being held in rigid relationship with said electrodes by said conductors whereby the complete assembly of conductors, medicine receptacle and terminals may be removed as a unit from the jar upon removal of said cover, and pivot means in connection with said conductors enabling the cover upon removal of the cover from the jar to be pivoted with respect to the medicine receptacle to enable convenient access thereto.

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