

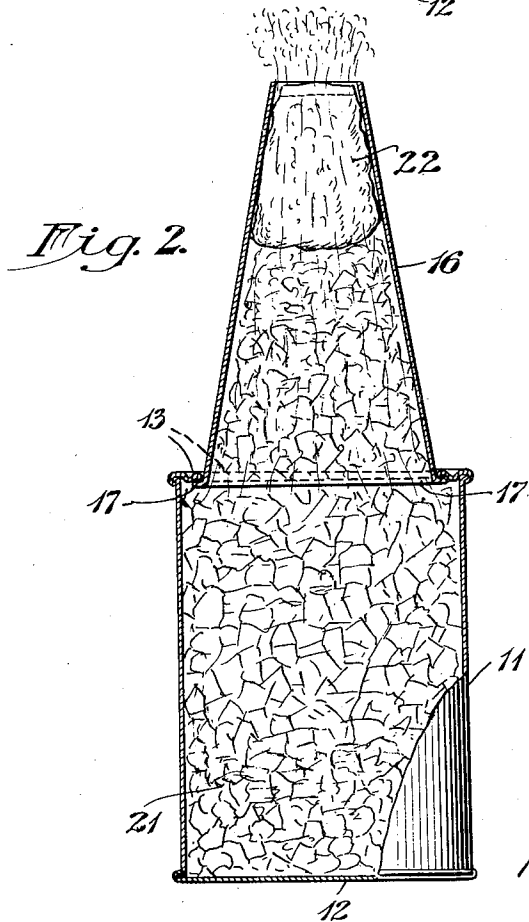
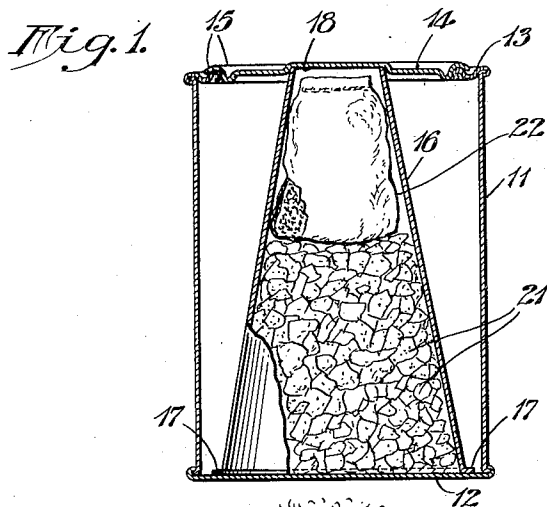
Feb. 14, 1950

M. KATZMAN
VAPORIZER

2,497,612

Filed Dec. 28, 1945

2 Sheets-Sheet 1



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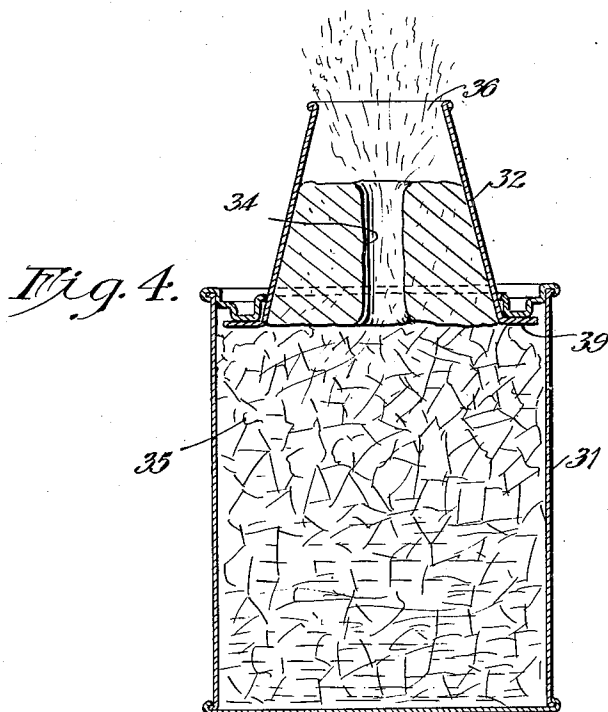
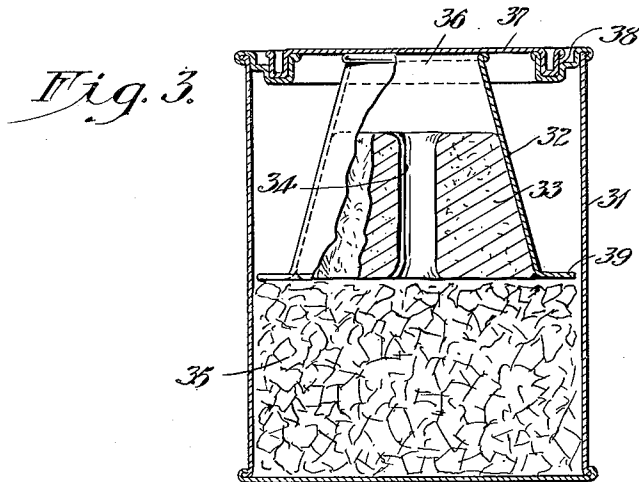
Feb. 14, 1950

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2,497,612

Filed Dec. 28, 1945

2 Sheets-Sheet 2



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2,497,612

VAPORIZER

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Application December 28, 1945, Serial No. 637,696

9 Claims. (Cl. 21-110)

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This invention relates to portable vaporizers for medications, insecticides or fumigating materials.

It is the object of the present invention to provide a vaporizer which is of a fireless type and which is not dependent upon auxiliary apparatus for supplying the heat required for its vaporizing action.

According to the invention, unslaked lime and water constitutes the heating means for vaporizing the medication, insecticide or fumigating material and the lime is made a part of the vaporizer construction, the water being added when the vaporizer is to be put to use. The vapor generated by the union of water with the lime is directed to the atmosphere through a spout, also a part of the vaporizer construction, which contains the medication, insecticide or fumigating material to be dispensed. The container housing these parts resembles a paint can and has the usual tight sealing cover or lid in the top which must be pried off to expose the spout and the materials. By adding the water to slake the lime, the spout is moved outwardly, by the expansion and pressure of the lime, through the uncovered opening of the can and retained by an engagement of a radial flange on the bottom of the spout with the top of the container. The vapor which is created by the slaking action is directed through a bag or other porous mass located in the spout to pick up the medication, insecticide or fumigant and the combined vapors or fumes are dispersed through the narrow outlet of the spout to the atmosphere. In one form of the invention the spout is the full height of the can, while in another form the spout extends only half the height of the can and the lime is retained in the can free of the spout.

For other objects and for a better understanding of the invention, reference may be had to the following detailed description taken in connection with the accompanying drawing, in which Fig. 1 is a cross-sectional view of the vaporizer in the form of the invention having the long spout;

Fig. 2 is a fragmentary view of the device, partly in section, showing the position of the parts of Fig. 1 when the vaporizer is in operation, and with the spout in its projected position, and

Figs. 3 and 4 are respectively similar views of another form of the invention.

Referring now to Figs. 1 and 2, there is a container or can 11 of a type similar to that used for paints, having a bottom 12 and a ring-like top

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13 and a round cover 14 tightly fitted into the ring-like top.

To remove this cover 14, it must be pried off by application of a tool under the radially extending flange 15 thereof. Since the cover 14 tightly fits the main body 11, there is provided an airtight package for the marketing of the device with its operating parts.

Inside of the container body is a spout or funnel 16 extending the full height of the can and having a radially extending flange 17 on the bottom end thereof. This spout tapers from a large diameter at the bottom to a small diameter at the top or outlet end. The upper end of the spout while the spout is contained in the can and with the cover 14 in place is confined against lateral adjustment in the can by projecting into a recess 18 provided in the cover 14.

When the cover 14 is removed and water added to the can, the spout 16 is projected out of the can due to the expansion of the lime and assumes the position shown in Fig. 2. It is prevented, however, from leaving the can by engagement of its radially-extending flange 17 with the top of the can.

Lumps 21 of unslaked lime are confined within the bottom of the spout. A sufficient quantity of the lumps is supplied so as to extend upwardly in the spout for more than half the height thereof. Above the unslaked lime and in the upper end of the spout 16 there is provided in a bag 22, containing the medication, insecticide or fumigating material and which is large enough so that it will be wedged into the upper end of the spout by the expanding lime and vapor pressure and not be easily displaced therefrom.

To effect the operation of the vaporizer, the cover 14 is removed and water is poured into the can along the outer side of the spout. This water passes inwardly under the flange 17 of the spout and along the bottom 12 of the can and engages the lime lumps to cause a heat and vapor generating action to be set up. The vapor is collected in the spout and passed through the bag 22 and its contents, at the same time, the lime will expand or swell and serve with the vapor pressure to raise the spout out of the can. The action continues violently for half an hour or so and thereafter slowly gives off vapor for a matter of several hours. This vapor must necessarily pass through the bag 22 in leaving the spout and in doing so vaporizes the material in the bag so as to unite with the

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vapors from the slaked lime to produce the desired fumes for discharge to the atmosphere.

In Figs. 3 and 4, there is another form of the invention. This form includes a container or can 31 having a spout 32 wider at the bottom than the spout 16 of the previous form and only half the height of the can 31 instead of extending the full height of the can.

Also, the medication, insecticide or fumigating material is in the form of a conical-shaped cake 33 adapted to fit in the bottom end of the spout 32. This cake 33 has a central opening 34 to permit the upward flow of vapor from lime material 35 lying in the bottom of the can and extending upwardly to half its height. The fumes from the lime react on the walls of the cake opening 34 upon passing upwardly toward outlet 36 of the spout to absorb and vaporize the material.

The spout 32 normally lies on the lime lumps and in the top half of the can 31 as shown in Fig. 3, and the can is closed by a cover 37 fitting a peripheral groove 38 in the top of the can. The spout 32 has its bottom end practically closed by the cake 33 and by means of this cake and a radially extending flange 39 on the spout, the spout is retained against downward displacement in the lime material 35. Since the lime material is not confined to the interior of the spout as in the previously described construction, more lime material may be stored within a given height of the can.

The operation of this form of the invention is similar to the other form in that it is first necessary to remove the cover and deposit water in the can. When the cover 37 is removed and the outward end 36 of the spout is exposed to the atmosphere, water is poured into the can and passes downwardly through the spout for contact with the unslaked lime 35. As in the other form, the lime undergoes a slaking action and expands to push upwardly the spout 32 to the position shown in Fig. 4. Full expulsion of the spout 32 is prohibited by the engagement of the radial flange 39 with the top of the can. It is preferable that the expansion of the lime be only sufficient when fully expanded to make the contact of the spout flange 39 with the top of the can. If other expansion of the material were permitted the same would be forced through the opening 34 of the cake 33 and lessen the efficiency of the vaporizer. The vapor resulting from the reaction acts upon the wall surface of the opening 34 of the cake 33 to absorb some of its ingredients and take these ingredients into the atmosphere with them. This vaporizing action continues as in the prior case for a considerable time, violently at first and then slowly thereafter.

Once the vaporizers have been used they can only again be used by replenishing the same with new materials. However, the can and spout are made of cheap materials and can be thrown away without great loss to the purchaser. If desired, packaged materials can be sold for refilling purposes. The can with its cover, spout and materials can be merchandised in the stores the same as other can goods are merchandised.

I have described what I believe to be the best embodiments of my invention. I do not wish, however, to be confined to the embodiments shown, but what I desired to cover by Letters Patent is set forth in the appended claims.

I claim:

1. A vaporizer comprising a container having an opening in a wall therein, a spout disposed

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in the container and movable through said opening, a first material in said container generating heat on the addition of a reactive reagent to said material and reacting expansively on said spout on the addition of said reactive agent to move said spout through said opening, and a second material in said spout lying between said first material and said opening and generating vapors on application of heat thereto.

2. A vaporizer as described in claim 1, said container having a ring around said opening and said spout having its end nearest said opening smaller than said opening to permit its extension therethrough and having near its other end means to engage said ring in extended position of said spout through said opening and to limit thereby said spout in said extended position.

3. A vaporizer as described in claim 1, said spout being conical and tapering towards said opening, the diameter of said spout at its larger end being greater than that of said opening in said container.

4. A vaporizer as described in claim 1, said opening being at the top of the container and being circular, and said container having a ring-like top around said opening, said spout being conical and having its upper smaller end smaller in diameter than said opening to permit its extension therethrough and having at its lower end flange means to engage said ring-like top in extended position of said spout through said opening and to limit said spout in said extended position.

5. A vaporizer as described in claim 1, said opening being on the top of said container, said spout extending substantially the full height of said container, said first and second materials being confined in said spout in inactive condition of said vaporizer with said second material lying above said first material.

6. A vaporizer as described in claim 1, said opening being on the top of said container, said first material being disposed substantially in the lower half of said container and said spout resting on said first material and extending substantially up to said opening, said vaporizer including means on the spout adapted to engage with the top of the container to prohibit its final expulsion entirely from the container when said first material has been reactively expanded.

7. A vaporizer as described in claim 1, said opening being on the top of said container, said first material being disposed substantially in the lower half of said container and said spout being conical and tapering upwardly towards said opening, said second material being in the form of a solid cake of conical shape fitting within the spout and defining a passage therethrough between said first material and said opening.

8. A vaporizer comprising a container having a top opening, a spout disposed in the container and movable upwardly through said opening to an extended position, a removable cover adapted to tightly fit said opening of said container in closed position and having a recess adapted in said position to removably receive snugly the upper end of the spout in retracted position, a first material in said container generating heat on the addition of a reactive reagent to said material, and reacting expansively on said spout on the addition of said reactive agent to move said spout through said opening, and a second material in said spout lying above said first material generating vapors on application of heat thereto.

9. A vaporizer comprising a container having

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a top opening therein, a removable cover for such opening, a conical spout disposed in the container upwardly movable and having a greater diameter at its lower end than the top opening in said container, a first material in said container and spout reactively expansible and generating heat of reaction on addition of a reactive reagent, a second material in said spout lying above said first material generating vapors on application of heat thereto, and means associated with said spout and said second material, previous

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to said vapors, but preventing passage of said second material.

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REFERENCES CITED

The following references are of record in the file of this patent:

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Number	Name	Date
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