

Oct. 18, 1966

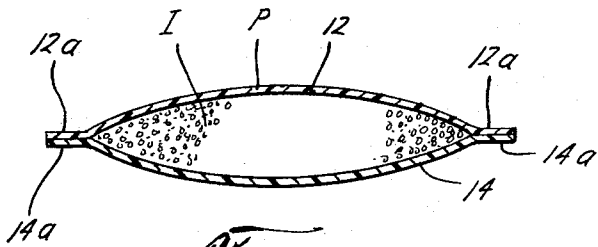
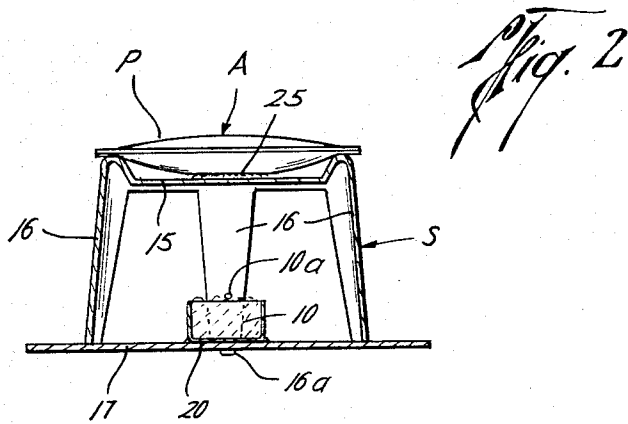
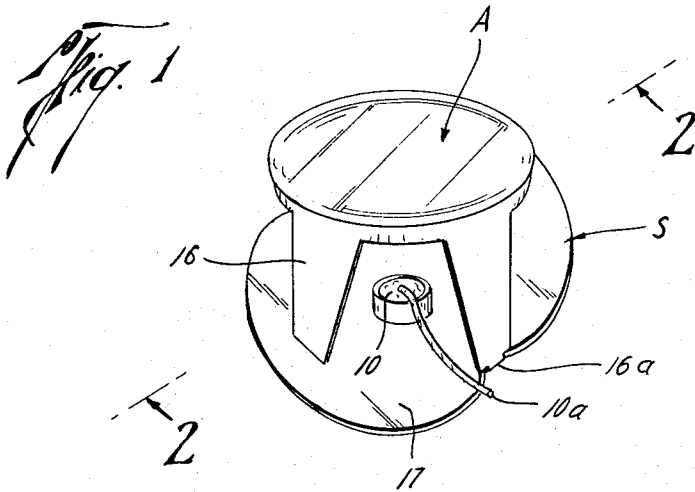
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3,279,118

APPARATUS FOR VAPORIZING INSECTICIDES

Filed Dec. 23, 1963

2 Sheets-Sheet 1



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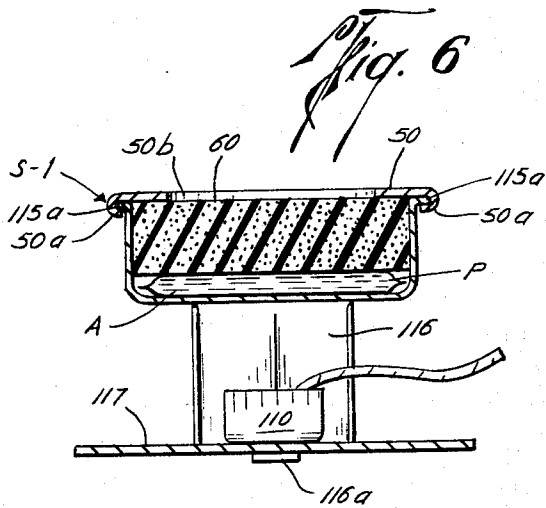
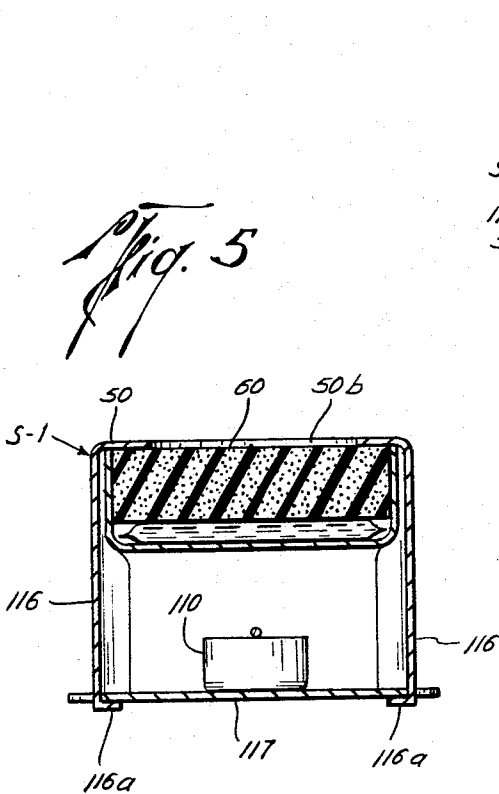
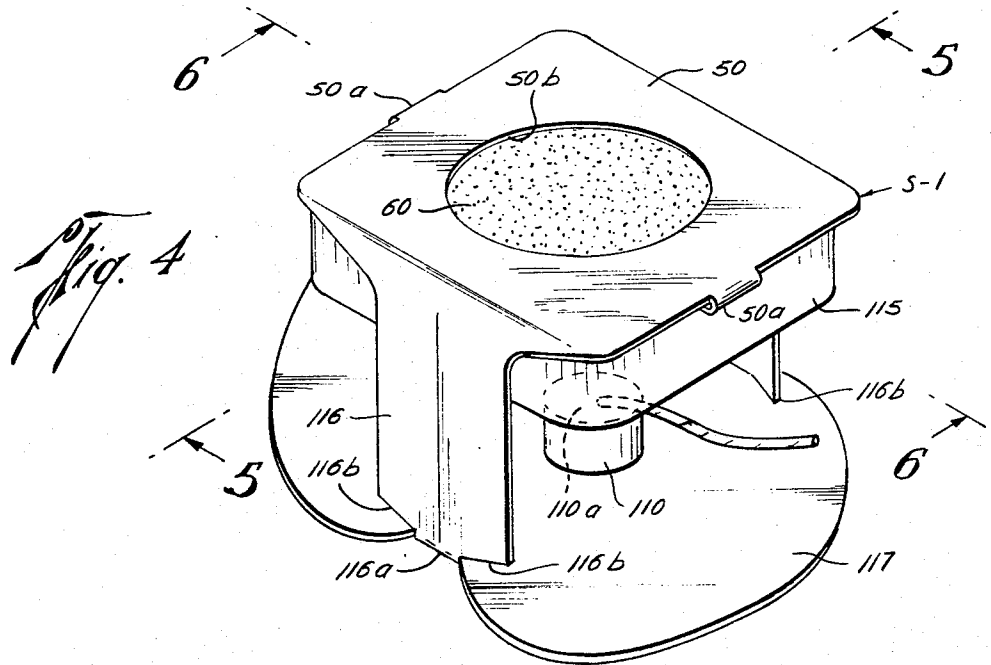
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APPARATUS FOR VAPORIZING INSECTICIDES

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2 Sheets-Sheet 2



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APPARATUS FOR VAPORIZING INSECTICIDES  
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Research, Inc., Harlingen, Tex.  
Filed Dec. 23, 1963, Ser. No. 334,078  
2 Claims. (Cl. 43-129)

This application is a continuation-in-part of my co-pending U.S. patent application, Ser. No. 270,706, filed Apr. 4, 1963, now abandoned.

This invention relates to apparatus for vaporizing insecticides.

An object of this invention is to provide new and improved apparatus for vaporizable insecticides which are capable of being vaporized by heat.

Another object of this invention is to provide a new and improved apparatus wherein one or more insecticides are disposed in a sealed pouch made of a material which melts at a temperature below the vaporization temperature of the insecticides therein.

A specific object of this invention is to provide a new and improved article which has an insecticide mixture of the gamma isomer of benzene hexachloride and o,o-dimethyl 0-2,2 dichlorovinylphosphate enclosed in a pouch or container made of a plastic material, gelatin or similar material which is impermeable to liquid to confine the insecticide therein and which has a melting point below the vaporization temperature of the insecticides in the mixture.

A further object of this invention is to provide a new and improved construction wherein a sealed pouch having vaporized insecticide therein is disposed in a holder which a polyurethane retaining element through which released insecticide fumes pass.

The preferred embodiment of this invention will be described hereinafter together with other features thereof, and additional objects will become evident from such description.

The invention will be more readily understood from a reading of the following specification and by reference to the accompanying drawings forming a part thereof wherein an example of the invention is shown and wherein:

FIG. 1 is an isometric view of one form of the assembly of this invention in position for use on a stand;

FIG. 2 is a vertical sectional view, partly in elevation, of the assembly of this invention and the stand therefor;

FIG. 3 is a sectional view of the assembly of this invention with the insecticide of this invention exposed;

FIG. 4 is an isometric view of a modified construction of this invention;

FIG. 5 is a vertical sectional view taken on line 5-5 of FIG. 4; and

FIG. 6 is another vertical sectional view taken on line 6-6 of FIG. 4.

In the drawings, the letter A designates generally the vaporizable insecticide assembly of this invention which is adapted to be mounted upon a stand such as indicated by the letter S in the drawings. The stand S includes a candle 10 having a wick 10a or any other suitable heating source which provides heat for vaporizing the insecticide of this invention as will be more fully explained hereinafter.

The insecticide mixture of this invention includes at least two components, one of which provides for a quick kill for various kinds of insects such as roaches, silverfish, ants, spiders, flying moths, flies, mosquitoes, gnats and the like together with a second component which provides a long-lasting residual killing action on such insects. In the preferred form of the invention, the first component which provides for the quick kill is the gamma isomer of benzene hexachloride which is sold under the

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trademark "Lindane" and which occurs as a powder at normal ambient temperatures. The second component which provides the long-lasting residual killing action is preferably o,o-dimethyl 0-2,2 dichlorovinylphosphate which is sometimes referred to as "DDVP" and is sold under the trademark "Vapona." The "DDVP" is a liquid at normal ambient temperatures.

Both of the components of the insecticide mixture of this invention are capable of being vaporized by heat without decomposing.

Since the "Vapona" is not only difficult to confine because it is a liquid at normal ambient temperatures but is also highly corrosive to metal and fairly toxic when it comes into contact with the skin of a human, the insecticide mixture of the present invention is confined within a sealed or closed pouch such as indicated at P in the drawings. The pouch P may be made of various materials such as polyethylene, vinyl and other synthetic plastics as well as gelatin or other materials which are capable of being melted at a temperature below the melting point of the insecticide mixture within the pouch P. Also, the material of the pouch P must be impermeable to liquid since the insecticide mixture of this invention is basically a mush or semi-solid formed by the mixture of the powder, "Lindane" and the liquid "Vapona."

The pouch P, when made of a plastic material, is composed of two sheets 12 and 14 which are sealed at the annular edges 12a and 14a to form a completely sealed enclosure for the insecticide I within the pouch P. The shape of the pouch P is preferably circular for use with the stand S, but the configuration of the pouch P may vary depending upon the place in which it is used. The edges 12a and 14a may be heat sealed or otherwise secured to render the entire pouch P impermeable to the liquid insecticide I included with such mixture. Of course, it will be understood that a gelatin or similar encasement may be provided which is made of a material other than sheet material.

Another advantage of the present invention is that the insecticide is not exposed to the air and therefore the absorption of moisture is prevented. This is particularly important with the chemical "Vapona" since it tends to absorb moisture from the air and hydrolyze into inert products.

The pouch P is preferably used with the stand S which may be formed in any suitable way but as shown in the drawings, it includes a receptacle 15 having legs 16 extending downwardly therefrom. The legs 16 are secured to a base plate 17 by folding under a tab 16a on at least two of the legs 16.

It will be appreciated that any other suitable means for attaching the legs 16 to the plate 17 may be employed. Normally, the stand S is made of metal and includes a holder 20 for the candle 10 or other heating source disposed below the receptacle 15.

The assembly A of this invention is normally mounted in the receptacle 15 and is adhered thereto by any type of suitable adhesive 25 so that the assembly A and the stand S may be handled as a unit.

With the present invention, the retaining film of the pouch or container P controls the rate at which the insecticidal vapors from the insecticide mixture I are released. The material of the pouch or container P melts to some extent before any vapors are released so as to permit a release of such vapors without a build-up of gas pressure in the container P. Then, quite unexpectedly, the layer of the melted and semimelted plastic, polyethylene or vinyl, retards the rate of vapor release from the insecticide I so that a slower evolution of the vapors from the insecticide is obtained than when such insecticide is vaporized without confining it in the pouch P. Such slower evolution of the vapors gives them a

chance to disperse over a greater area than with the insecticide alone.

In the use of the insecticide and the insecticide assembly of this invention, the assembly A is disposed on the stand S or a similar support. When the pouch P has been glued or otherwise positioned on the stand S, the unit is located in the room or building to be fumigated. The room or building is closed and all persons should leave once the fumigation has started. The candle 10 or other source of heat melts the materials 12 and 14 of the pouch P so as to gradually release the insecticide vapors.

In FIG. 4-6, a modified construction is illustrated wherein the insecticide assembly A is substantially the same or identical to the assembly A described heretofore in connection with FIGS. 1-3. The stand S-1 of FIGS. 4-6 and the other portions of the construction are modified as compared to FIGS. 1-3. Thus, the stand S-1 includes a base 117 which is provided with a central holder 110 having a candle 110a or other similar heating source disposed therein.

The upper portion of the stand S-1 includes an upper lid or cover plate 50 which is preferably integral with upstanding legs 116. The legs 116 are formed with tabs 116a which are bent underneath the base 117. It is to be noted that the lower edges 116b of the base are deformed or bent inwardly so as to be disposed on the top surface of the base 117 so that the lid 150 is locked in position on the base 117 when the tabs 116a are bent underneath the plate or base 117.

A tray or holder 115 is disposed below the lid or cover 50 and, as shown, is rectangular in shape to conform with the configuration of the lid or cover 50. The holder 115 is provided with laterally extending tabs or projections 115a at its upper edge in proximity to metal tabs 50a provided on a lid or cover 50. The tabs 50a are bent downwardly and around the tabs or projections 115a so as to support the entire holder or receptacle 115.

The insecticide pouch P with the insecticide therein is disposed within the receptacle or holder 115 as best seen in FIGS. 5 and 6. A resilient porous retaining element 60 is disposed within the holder or receptacle 115 above the pouch P. A suitable opening 50b is provided in the cover 50 so that when vapors are released from the assembly A, such vapors pass upwardly through the retaining element 60 and outwardly through the opening 50b.

The retaining element or pad 60 conforms with the shape of the receptacle or holder 115 and it is held in a slightly compressed condition between the lower surface of the cover 50 and the upper surface of the pouch P so as to retain the assembly A in the position at the bottom of the receptacle 115. The pad or element 60 is formed of polyurethane or other material which is permeable to the vapors discharged from the insecticides when they are released from the pouch P by heating.

In addition to its retaining function, the element 60 also prevents a splattering of the insecticide liquid during the heating thereof for vaporization. Also, the upper surface of the insecticide is protected against inadvertent contact by an individual due to the presence of the element 60 above the insecticide within the pouch P.

The apparatus of FIGS. 4-6 is used in the same way as described heretofore in connection with the construction of FIGS. 1-3 in that the heating of the assembly A with the candle 110a or other suitable heating means causes a melting of the pouch P and a vaporization of the insecticide therein. As the vaporization takes place,

it passes upwardly through the resilient porous element 60 for discharge through the opening 50b of the cover 50 to fill the room or other area which is to be fumigated.

Should it be desirable to use the stand S-1 again, the tabs 50a may be bent to release the container or holder 115 from the cover 50. Then, the retaining element 60 may be removed for cleaning or replacement, and another assembly A may be inserted within the container 115. A reassembly of the parts may then be effected so that the unit can be reused.

The foregoing disclosure and description of the invention is illustrative and explanatory thereof and various changes in the size, shape, and materials as well as in the details of the illustrated construction may be made within the scope of the appended claims without departing from the spirit of the invention.

What is claimed is:

1. An apparatus for vaporizing insecticide, comprising:
  - (a) a closed pouch having insecticide therein,
  - (b) a holder for said pouch having a recess within which said pouch is disposed,
  - (c) legs extending downwardly from said holder,
  - (d) a base for connection with said legs,
  - (e) means connecting said legs to said base,
  - (f) means on said base for generating heat to melt said pouch and vaporize the insecticide therein,
  - (g) a cover for said holder having an opening therein, and
  - (h) a resilient vapor-permeable retaining element disposed in said holder between saidcover and said pouch for retaining said pouch in said holder while permitting the passage of vapors from the insecticide.
2. An apparatus for vaporizing insecticide, comprising:
  - (a) a closed pouch having insecticide therein,
  - (b) a holder for said pouch having a recess within which said pouch is disposed,
  - (c) a cover for said holder having an opening therein,
  - (d) legs extending downwardly from said cover,
  - (e) means securing said holder to said cover for thereby supporting said holder on said legs,
  - (f) a base for connection with said legs,
  - (g) means connecting said legs to said base,
  - (h) means on said base for generating heat to melt said pouch and vaporize the insecticide therein, and
  - (i) a resilient vapor-permeable retaining element disposed in said holder between said cover and said pouch for retaining said pouch in said holder while permitting the passage of vapors from the insecticide.

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SAMUEL KOREN, Primary Examiner.

D. J. LEACH, Assistant Examiner.