April 6, 1954 J. K. CRIPPEN 2,674,018

DISPOSABLE MOTH CONTROL VAPORIZER

Filed Sept. 29, 1950

Fig. 1

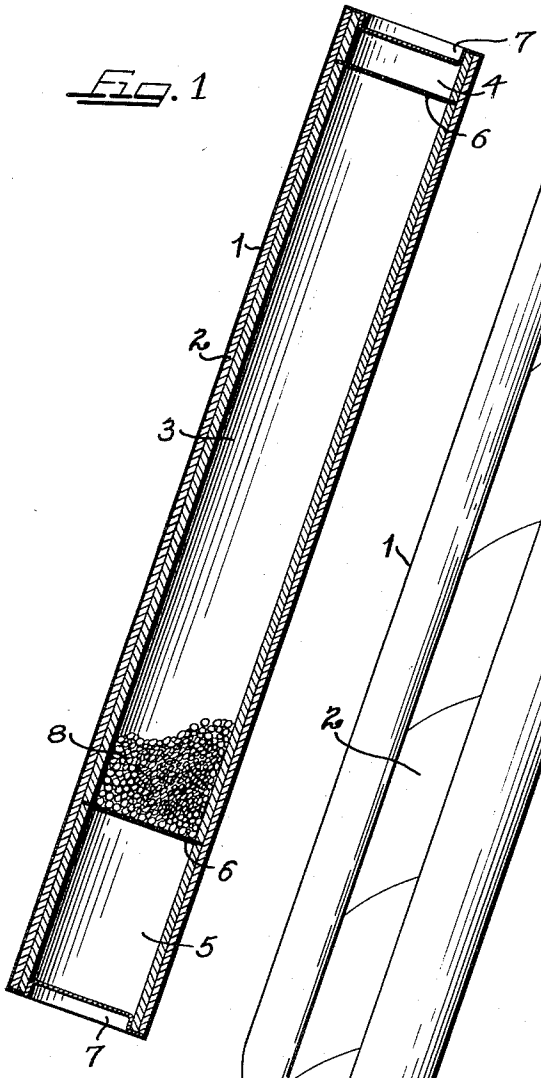
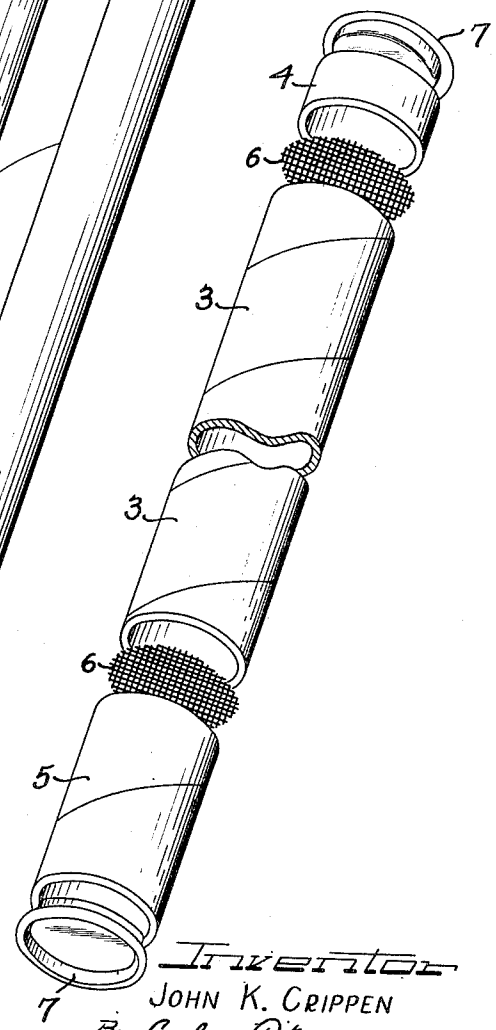


Fig. 2

Fig. 3



Inventor

JOHN K. CRIPPEN

By: Carlson, Pitzner, Hubbard & Wolfe

Attys.

Patented Apr. 6, 1954

2,674,018

UNITED STATES PATENT OFFICE

2,674,018

DISPOSABLE MOTH CONTROL VAPORIZER

John K. Crippen, Park Ridge, Ill.

Application September 29, 1950, Serial No. 187,380

1 Claim. (Cl. 21—127)

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This application relates to a device for circulating or blowing the fumes or gases from certain volatile compounds which are used for "controlling" moth larvae and moth. By "controlling" is meant the partial or complete destruction of moth and moth larvae by use of said volatile compounds.

The compounds ordinarily used for this purpose include paradichlorbenzene, naphthalene and blends of the two in various proportions; and other similar compounds or combinations of chemicals from other synthetic or natural sources whose vapors or fumes or gases are beneficial as described above.

Camphorated oil, oil of cedarwood, oil of cedarleaf, oil of pine needle, oil of eucalyptus, and other synthetically or naturally-produced chemicals are sometimes mixed or blended with the above for further aid in moth control. These aromatic bases have a real or psychological effect in moth control. The oil of cedarwood, for example, is generally considered to be a good moth preventive and closets, etc., are lined with cedar wood for its preventive effect on moths and moth larvae. The oil of cedarwood, blended with the moth control chemicals, will have a real as well as a psychological benefit.

The use of the various oils such as described above and their use in conjunction with moth controlling chemicals are well known to the arts. Any one or more of these chemicals, or combinations of the same may be employed in the moth bomb fully described in this application.

My device, which I call a moth bomb, or vaporizer, is similar in some respects to all vaporizers employed in conjunction with vacuum cleaners, and is used by insertion of the "tool end" of the vacuum cleaner hose. Such hoses are normally furnished with only tank-type vacuum cleaners, though they may also be used with some upright models, with a suitable adapter.

The tool ends are generally of uniform size with or without a taper depending upon the model. However, they are usually tapered, and measure about $1\frac{9}{16}$'' to $1\frac{5}{16}$'' at the widest point. The taper is ordinarily put on the metal hose-end by a swaging operation. Most of such hose assemblies are made by companies specializing in the manufacture of flexible hoses and sold interchangeably to various vacuum cleaner manufacturers.

The use of such hoses, interchangeably by many vacuum cleaner manufacturers probably is due in part to the fact that the plastic vaporizers commonly used in the vaporizing of the chemicals above described are expensive. A set of eight cavity molds may run into many thousands of dollars for the molds alone; and the cost of the plastic vaporizers is especially high, although they are given free with the vacuum cleaner sets—the cost, of course, having been included in the cost of manufacture of said sets.

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Thus, the "tool end" or metal-swaged end of the vacuum cleaner hose is placed in an opening of the moth vaporizer containing, usually, paradichlorbenzene or any of the above, which has been placed inside the vaporizer by the operator of the vacuum cleaner. The chemicals are placed in a chamber provided when the two plastic parts—one employing a male, and the other a female thread—are taken apart.

The above vaporizer may be used either directly upon the vacuum cleaner (as, for example, is done with Electrolux vacuum cleaners, and with Health-Mor and some other makes of vacuum cleaners) with the hose-end coupled directly to the vaporizer, or it may be placed at the end of the hose as described above.

The vaporizer or hose-end (with or without an added nozzle) is then held behind draperies, or under rugs, or is set in closets by the user, wherever moth control is considered beneficial. Other materials are sometimes used in place of plastics in similar construction to the above vaporizer, but plastics of the various types are most often used by the vacuum cleaner manufacturers for this purpose. The "tooling" and die-cost, plus punching or drawing operation (in the case of metal); or the mold-cost plus molding operation costs (in the case of plastics) are high.

It is a general object of the present invention to provide an improved vaporizer for use with a vacuum cleaner or the like to inhibit, destroy, repel, or control moth, moth larvae or moth incrustations through the application of moth inhibiting, repelling or controlling gases formed by blowing air over certain volatile chemicals, which is of simple and durable construction and which may be manufactured so inexpensively as to permit of disposal after the chemicals contained therein have been used up.

Another object is to provide a disposable moth control vaporizer which not only serves to dispense moth controlling gases from volatile or sublimatory chemicals contained therein, but which also serves as the merchandising container for such chemicals.

Still another object of the invention is to provide a device of the foregoing character which

results not only in substantial savings by providing a less expensive container, but also in providing a vaporizer which is much handier to use than the ordinary plastic, glass, metal, wood, rubber or vaporizers of other non-disposable materials.

The special design and treatment of this disposable-container-and-vaporizer combination permits it to be used as a combination package and vaporizer and in this it differs distinctly from the above commonly-used types.

The objects of the invention thus generally set forth together with other objects and ancillary advantages are attained by the construction and arrangement shown by way of illustration in the accompanying drawings, in which:

Figure 1 is a central longitudinal section through a disposable container and vaporizer embodying the features of the invention.

Fig. 2 is a perspective view of the outer tube and covering therefor of the device shown in Fig. 1.

Fig. 3 is a fragmentary exploded perspective view of the components of the instant device received within the outer tube shown in Fig. 2.

Referring more particularly to the drawings, the container there shown is made of spirally-wound cardboard. However, either spiral or convolutely-wound cardboard, chipboard, jute, kraft or fibre may also be used. The spirally-wound tube has the advantage of not using a type of seam that is detrimental to some degree in achieving complete roundness at one end of the tube for tight fit of the other parts. By "convolute" is meant a tube which has a longitudinal seam, in place of the spiral (flush) seam.

It should be noted that although tubular construction is used for the model as the most practical, the device may also be of almost any other shape with the various parts conforming to that shape. However, the round or tubular shape is the least expensive and practical for a number of other reasons. The component parts (excepting discs, caps and labels), hereinafter called "tubes" could be triangular, square, rectangular, oval or almost any other shape, and still perform the unusual functions described in this application.

It would also follow, obviously, if other than tubular construction is used, the ends of the vaporizer must be made tubular unless the hose ends were also changed since the metal hose ends now universally used are round. Other component parts such as closures or caps and perforated screens (hereinafter called "discs") would have to conform to the shape of the "tubes."

Since paradichlorbenzene and the other moth controlling compounds must of necessity be able to evaporate or sublimate, it is necessary that certain means be provided to prevent the sublimation or evaporation before they are ready to be used for moth control. That is, the package must be suitably protected so that, until it is to be put to use, the compounds will not sublimate or evaporate by themselves. This is accomplished by the unusual construction of the container and the parts of the container further described below.

My specially made moth bomb or vaporizer, consists of the following parts, assuming that the construction is tubular: 1 outer tube which is labeled and which is made of kraft, cardboard, chipboard, jute, fiber or other similar inexpensive suitable material; 2 one long "inner tube" which is, however, shorter than the outer tube and which is glued in place within the outer-tube with further spaces at either end between the ends of the outer and "inner tubes"; 3 two perforated metal, plastic, or other-type screens which rest upon this "inner tube"; and 4 two collars which are also glued in place (and which for additional protection may also be stapled in place) and which serve to hold the perforated screens in place between extremities of "inner-tube" and the two outer tubes or collars.

It has been found most economical and practical to have these inner tubes, i. e., two short collars, come flush with the ends of the outer tube, and also to have the metal caps 5 exactly conform in fit inside these two ends to keep the container airtight.

When staples are used to further hold these two collars in place, then it is best to not allow the staples to penetrate through the two thicknesses (outer-tube and the two inner-collars) because at one end of the moth bomb or vaporizer the metal tool hose-end must be inserted and withdrawn, and the protruding of the staples would make this a difficult procedure.

The "inner-tube" (which means the larger one inside which holds the chemicals), as well as the two end collars, must conform in their outer diameter with the inside diameter of the outer tube. And they should be manufactured with such precision standards as are possible with spirally-wound tubes.

Comparatively good precision tolerances are also provided in the manufacture of other types of tubes and other parts for said device though in our experience the spirally-wound tubes have proven more easily controlled as to external and internal diameters, because of the flush seams.

The above gives the description of the combination container, or vaporizer or moth bomb as shown on the label on the model, but some additional features are needed to assure complete usefulness and practicability.

These include (A) the treating in some way of the exterior and/or interior surface or surfaces of the tube to prevent escaping of the gases; (B) the tight seating of a cap or other closure at either end of the tube to prevent escape of the gases. This cap must also be of a practical type so that it may be easily removed when the vaporizer is to be used, and replaceable when the operator is through. The operator simply removes the caps, inserts the tool-end of the hose into one end of the bomb, places the other end of the hose into the vacuum cleaner connection on the blower end, and proceeds to use the vaporizer as described earlier in this application.

I have found the so-called single friction cap to be most useful for said purpose. By single friction is meant a cap containing but one rim or lip, having a slight taper on the sides, or closure surface, or part which is inserted into the container. However, double friction caps (which is the standard paint-top cap) of metal or other material, stoppers, caps or even discs of various types could be used with some degree of success.

A disc, for example, could be used on either end, held in place by a "shrink-on" or similar material which shrinks in place and would hold the discs from both top and sides tightly onto the open ends of the container. Scotch tape could also be used. I prefer, however, the single friction cap for a closure at each end.

Said caps fit tightly into the two inner tubes or collars at either end, when inner collars are

made flush with extremities of outer tube. Another acceptable construction would be provided by having the inner tube ends, or collars, slightly shorter and, of course, in that case the single friction cap would fit the inside diameter of the outer tube.

I find it most practical, however, to have the inner tube ends (collars) flush with outer tubes and to have the caps fit the inner tube, because this construction provides strength by giving double thickness at the ends. Such strength is important as the tool-end of the vacuum cleaner hose may be inserted and removed many times before the supply of chemicals has been exhausted.

The use of caps or other seals or closures at either end does not completely protect against sublimation, evaporation or loss of the chemicals inside. Some additional methods are, as already brought forth in this petition, needed to keep the parchment, cardboard, chipboard or fiber container from allowing leakage or escape through the pores of the material itself. This may be accomplished by a number of means, or by any combination of the same: (1) by the dipping, spraying or otherwise-coating of the outer or inner tubes; (2) by a protective coating, sprayed, lithographed, printed or otherwise bonded to the label; (3) the use of a metal foil label.

I prefer the use of a metal foil label which could be leadfoil, tinfoil, copperfoil, aluminumfoil, etc., which may or may not be bonded to a suitable paper surface. There are papers to which a thin coating metallic surface is added in the process of manufacture, and such papers also give the necessary protection and provide a practical and attractive label.

Any of the above methods for protecting against loss by evaporation or sublimation or any combination of two or more included as a feature of my application, constitute an original idea since in the past metal containers, glass containers, and the like, which are much more costly have been used for packaging of paradichlorbenzene and similar moth controlling chemicals.

Cellophane bags and other type protective bags have been used but none of them have combined the unusual features of the package itself with the use of the container, and the unique preparation of said container, combined with special means which, together make available a very practical, useful and inexpensive moth control vaporizer and package combination.

I claim as my invention:

A disposable moth control vaporizer comprising, in combination, an outer tube, an impervious cover fastened about said tube, a second tube fixed within said first tube having its ends terminating in inwardly spaced relation to the ends of said first tube, a pair of perforated disks disposed within said first tube, a pair of tubular collars respectively disposed adjacent the ends of said first tube and within the same and engageable with said disks for supporting the same adjacent the ends of said second tube and in trans-axial relation thereto and to said first tube, said second tube and said disks defining a chamber for holding a quantity of sublimatory mothicide, one of said collars being adapted to receive therein the end of a vacuum cleaner hose.

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