Sept. 12, 1950 D. E. PEARSALL 2,521,942

MEANS FOR CONTAINING AND DISPENSING HEAT VAPORIZABLE CHEMICAL AGENTS

Filed Sept. 26, 1947 2 Sheets-Sheet 1

Fig. 4

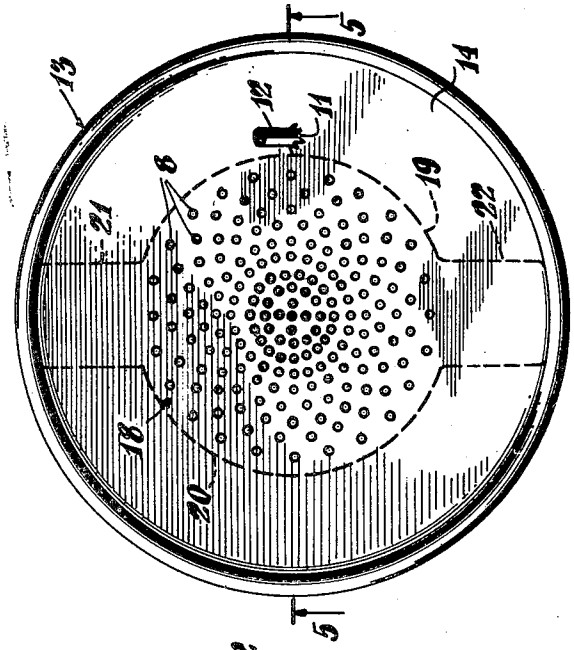


Fig. 5

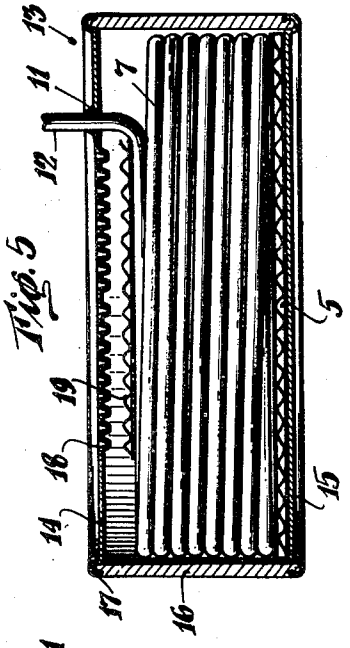


Fig. 1

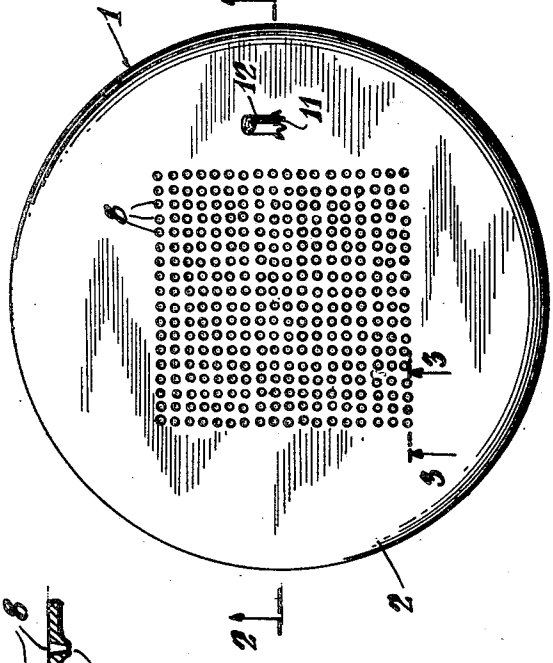


Fig. 2

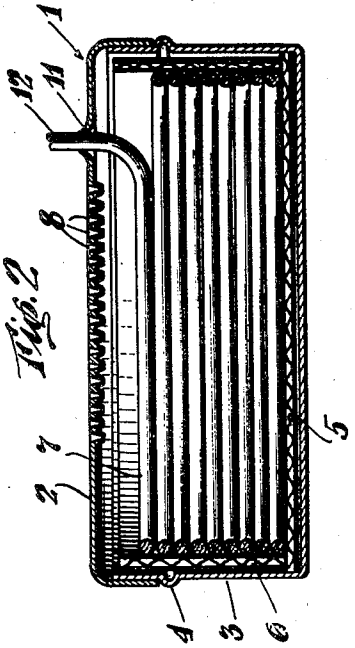


Fig. 3



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MEANS FOR CONTAINING AND DISPENSING HEAT VAPORIZABLE CHEMICAL AGENTS

Filed Sept. 26, 1947 2 Sheets-Sheet 2

Fig. 6

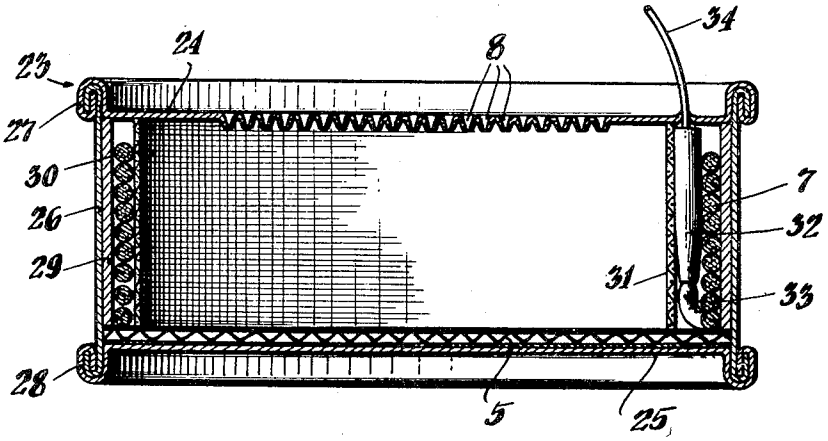
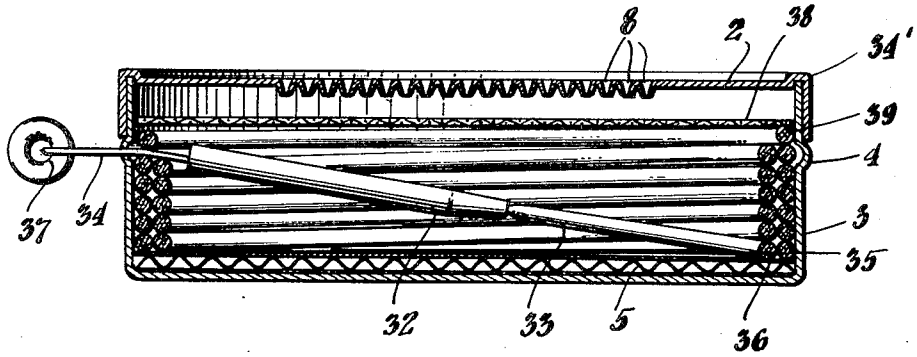


Fig. 7



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MEANS FOR CONTAINING AND DISPENSING HEAT VAPORIZABLE CHEMICAL AGENTS

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Application September 26, 1947, Serial No. 776,188

12 Claims. (Cl. 21—111)

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My present invention relates to an article of manufacture which has for its purpose the dissemination of heat vaporizable chemical agents.

While the devices of the present invention may be operative for vaporizing many different kinds of chemical agents, some of which are toxic in character so as to kill insects, bacteria, fungii and the like, and some of which are designed for the purpose of disseminating a chemical agent to assist in the growth of plants for example, the present invention will be particularly described for disseminating a toxic agent such, for example, as 2,2 bis (para chloro phenyl) trichlorethane, generally known by the abbreviation "DDT," for particular use as an insecticide. It will be understood, however, that the invention is not limited to the particular agent used, so that the following particular description is an example only of the invention.

As such the present application constitutes a continuation-in-part of my prior and co-pending application Ser. No. 672,288, filed May 25, 1946, entitled Toxic Vapor Producing Device, now abandoned.

The device of the present invention comprises generally (1) a suitable container for enclosing and burning a cord-like element, (2) the cord-like element in assembled form which contains a heat-vaporizable active chemical agent and an oxygen-sufficient combustible composition, (3) means of igniting the cord-like element, and (4) means of venting the generated vapor and gases of combustion. The cord-like element forms the subject matter of my co-pending patent application Ser. No. 615,601, filed September 11, 1945, entitled Toxic Vapor Producing Device. This prior application discloses and claims the cord-like combustible element including a vaporizable or volatilizable chemical agent, per se.

A primary object of the present invention is to provide a device of the character generally hereinabove set forth for producing aerosol vapors from heat-vaporizable chemical agents, such as insecticides and distributing uniformly the highly active vapors thereby producing a fumigation and in addition gradually condensing the vapors to produce residual films on any surface with which they may come in contact, which films are durable for varying periods of time, depending upon the material used and the conditions present.

A further object of the present invention is to provide a non-combustible device in which a

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combustible cord-like element of the character hereinabove set forth may be burned with ease and safety indoors. The operator need not be present after the device has been ignited and special provision is made to prevent egress of burning solid particles or flame which might tend to set fire to surrounding combustible material such as wooden furniture, rugs, etc.

A further object of the present invention is to provide a device of the character hereinabove referred to including means for controlling the rate of burning of a combustible cord-like element as set forth in my prior application Ser. No. 615,601 above referred to, so that the proper temperature and pressure relationship will be obtained in the container particularly as a result of the control of the burning time, and so that the combustion conditions will result in a high vaporization efficiency of the heat-vaporizable chemical agent, while at the same time preventing undue and undesired chemical decomposition of the chemical agent incident to the combustion.

A further detailed object of the present invention is to provide an article of the character set forth wherein desired pressure relationships and combustion time is controlled, so as to provide sufficient pressure to give good uniform vapor circulation in the air to be treated by the vaporized chemical agent while keeping the pressure within limits such as not to cause rupture of the container.

A further object of the present invention is to provide an article of the character set forth with means for intiating the combustion in a safe manner from the point of view of relatively unskilled using personnel, for example, by providing a conventional pull-wire igniter associated with one end of the cord-like element inside the container and with the pull-wire extending through a wall of the container, so as to be accessible for initiating the combustion operation from the outside, without requiring opening of the container and permitting the container to be sealed closed during the manufacture thereof.

Other and more detailed objects of the present invention will become apparent from a consideration of the following specification and appended claims when considered in connection with the accompanying drawings, in which:

Figure 1 is a plan view of one relatively simple embodiment of the invention;

Fig. 2 is a view in vertical section substantially on line 2—2 of Fig. 1;

Fig. 3 is an enlarged detailed view substantially in vertical section on line 3—3 of Fig. 1;

Fig. 4 is a view similar to that of Fig. 1 showing in plan another form of the invention;

Fig. 5 is a central vertical sectional view of the form of the invention in Fig. 4 taken substantially on the line 5—5 of Fig. 4;

Fig. 6 is a view similar to Figs. 2 and 5 showing in substantially central vertical section a further embodiment of the invention; and

Fig. 7 is a similar view in central vertical section showing another embodiment of the invention.

The invention generally comprises a suitable container, which is preferably of a generally cylindrical shape and which may be made wholly or in part of metal, for example, it may be provided with metallic ends or top and bottom portions and side walls which are of some other material such as fiber board or other material having adequate rigidity. Other combinations may be employed within the purview of the present invention. In the event that some inherently combustible materials are used, suitable provisions may be employed in conjunction therewith for rendering such materials fireproof or substantially so.

The container may be made up in any manner known in the art of container manufacture, it being unnecessary that the joints be hermetically sealed, but normally it is desired to have the cover or ends suitably secured in a rigid manner to the side wall portions. This may be effected for example, by rolling over the edges of material as shown in Fig. 6, by suitably crimping the edges of the end portions to the side wall portion as shown for the composite container construction shown in Figs. 4 and 5, or by the use of tapes or other adhesive materials suitably secured to both the cover and ends and adjacent portions of the side walls in a manner not particularly illustrated, but which will be obvious to those skilled in the art. If desired the ends or cover portion may be connected to the side walls by screw threads or bayonet joints or in any other desired manner.

Cans or containers of different sizes both as to height and diameter or cross-section may be used. However, the cubical contents of the can or container preferably bears a relatively specific relation to the amount of cord which it should be arranged to contain, as hereinafter more fully set forth.

Referring now to Figs. 1 to 3 of the drawings, a suitable can is indicated generally at 1. This can may be made of metal or other suitable fire resistant material and be of a generally flat cylindrical shape. The can is provided with a top portion or cover 2 and a bottom portion 3, these parts fitting together as best shown in Fig. 2 and a suitable flange 4 being provided on the portion 3 to serve as a stop for limiting the telescoping movement of the cover portion 2 when placing it in position on the can. Inside the can there is a bottom liner member 5 of suitable insulating material such as a corrugated board suitably fireproofed by treatment with some chemical agent known for this purpose. The side walls of the portion 3, which may be of metal in the form shown, may also be separated from the combustion zone by an annular band 6 of material similar to that of the bottom liner 5. This lining of the side walls is normally resorted to when the side walls themselves are of some metallic material having high heat conductivity characteristics, so as to control the rate of combustion of the cord-like element, here shown at 7. This

cord-like element is shown coiled in an annular coil inside the can or container 1, although it could be disposed in any other desired conformation or arrangement within the can or container.

It is normally desired that the top portion 2 of the can be permanently secured to the bottom portion 3 thereof. No means are shown in this form of the invention for effecting this result. It will be understood however that suitable connection might be made by soldering, by use of adhesives between the telescoping portions, or by the application of an annular band of adhesive tape covering the joint between these two portions. All such means are to be considered within the intended scope of the present invention.

Suitable means must be provided for the egress of products of combustion and the vaporized active chemical agent, which is contained within the cord-like element 7. For this purpose there is shown in the form of Figs. 1 and 2, a plurality of small holes 8. The construction of these holes is shown more in detail in Fig. 3, wherein the holes are formed by punching through the metal of the top of the container from the outside toward the inside in a manner such as to form inwardly projecting flange portions as shown at 9, surrounding the small apertures or holes 8. These flange portions 9 have rough or irregular lower edges, indicated at 10, which assist in preventing the egress from the interior of the container of burning solid particles, which might ignite combustible material near the container during the use thereof.

The holes 8 should have an opening having a diameter from about 0.01 to 0.20 inch. As shown, there is a substantially square group of holes which should have a total effective venting area from 0.003 to about 0.0125 square inch. These limits and the limits as to the size of the holes jointly determine the number of holes to be used. The determination of the exact number of holes, within the limits as given, may depend in part at least upon the amount of cord to be contained within the container in question and other characteristics of the size of the container, the amount of insulation therein such as the members 5 and 6, any screens or baffles in the container as hereinafter set forth and other factors, which will have a bearing upon the rate of combustion. This rate is, of course, also dependent upon the internal construction and combustion characteristics of the cord-like element 7 itself. In general the purpose is to permit the building up of a suitable safe pressure within the container, so that the dissemination of the vaporized active chemical agent will be as complete as possible.

The size of the container 1 is determined by the length and size of the cord 7 and the amount of combustible and vaporizable material therein. For example, about 1 to 2 cubic inches of container volume will be provided for each foot of approximately ⅛ inch diameter cord to be held within the container. Such a cord may contain from about 0.2 to 1.0 gram of an active chemical agent such as "DDT" per foot of length and from about 0.5 to about 4 grams per foot of a combustible powder, such as black powder, as set forth in greater detail in my co-pending application Ser. No. 615,601 above referred to.

Means are provided in conjunction with the containers according to the present invention, for the initiation of the combustion of the cord therein. A simple means to this end is shown in Fig. 1, wherein a suitable aperture of approximately the

size of the cord is formed in one wall of the container and an end of the cord is passed therethrough, so that it may be accessible from the outside of the container for ignition by a match or lighter. As shown, such an aperture is provided at 11 through which a cord end 12 is passed (Figs. 1 and 2). This aperture 11 is formed by punching the metal of the top from the inside toward the outside, so that the irregular edge portion of the hole or aperture is effective to prevent the cord inadvertently moving in or out of the hole.

Turning now to the form of the invention shown in Figs. 4 and 5, there is illustrated a container 13 having metallic top and bottom portions 14 and 15 respectively and having fiber side walls 16. In this case the top and bottom portions are crimped to the side walls as by rolling the edges over as shown at 17.

In this case, as the side walls are themselves of fiber and hence have a relatively low heat conductivity, no insulation is provided intermediate the coil of the cord 7 and the side walls. On the other hand an insulating bottom liner member 5 is employed in the same way and for the same purpose as previously described in connection with the form of the invention shown in Figs. 1 and 2.

The construction in general is similar to the previous form with the exception that in this form the group of holes generally designated at 18 is shown in a generally circular arrangement. A major difference between the forms is however, the provision of a baffle generally indicated at 19 inside the container in the form of the invention of Figs. 4 and 5. This baffle has a portion, here shown as a circular portion 20, Fig. 4, which is positioned below and vertically aligned with the group of holes 18 and has horizontal dimensions somewhat greater than those of the group of holes, so that any gas or vapors generated within the container from the combustion of the cord 7 or the combustible material thereof and including vaporized active chemical agent, will be required to pass in a curved or circuitous path from its point of generation to the outlet or egress means comprising the group of holes shown at 18. In general the holes may be formed as shown in enlarged detail in Fig. 3 and as above described. The baffle member 19 should have tab portions shown at 21 and 22, Fig. 4, which will insure that it remains in place and properly prevents direct egress of the vapor and gas through the holes 8. It is further noted that as shown in Fig. 5 the baffle 19 may be made of corrugated fiberboard having open corrugations on its upper side, which extend parallel to the center lines of the tabs 21 and 22. The baffle 19 may be made of any desired material and may have spacer portions abutting against the under side of the top of the container, so as to hold the baffle a predetermined distance away from such top, this construction not being particularly illustrated in the accompanying drawings.

Means for igniting the cord in the form of the invention of Figs. 4 and 5 may be the same as for Figs. 1 and 2 form, so that the parts in this respect are given the same reference characters.

Turning now to the form of the invention shown in Fig. 6, which for many purposes is a preferred commercial form, there is shown a container generally indicated at 23 having a metallic top and bottom portion 24 and 25 respectively and cylindrical side portions 26 connected together at the peripheries of the top and bottom by rolled edge

joints 27 and 28 in a manner conventional in the tin can making industry. The bottom of the container may be provided with a liner 5 as described hereinabove, while the side walls may be provided with a suitable insulating lining 29, which in this case is shown as a chipboard construction, rather than of a corrugated fiber material as shown for the corresponding element 6 of the form illustrated in Fig. 2. Either of these constructions may be used alternatively and as desired.

Inside the container 23 there is arranged an annular coil 30 of the cord 7 here shown as a single layer or tier although a desired amount of cord in one or more layers may be used depending upon the dimensions and proportions of the container and the purpose for which it is to be used, as well as upon other dimensions. Inside the coil 30 of the cord is arranged an annular wall 31 of a fine screen wire such as 20-mesh or smaller. This wall or collar is arranged in an annulus and is substantially cylindrical in practice, although the cylindrical shape is not critical. What is important is that all the gaseous products of combustion and vaporized chemical agent be required to pass through the wall of screen 31 prior to passing to the series of holes 8, which are formed as shown in the top of the container. While there are shown a plurality of holes 8, as previously described, it will be understood that a smaller number of openings of desired construction may be used down to and including a single opening of the desired cross-sectional area. This is particularly true when some means other than the depending flange portions 9 is relied upon for inhibiting the passage to the outside of the container of burning particles of solid matter which might ignite adjacent combustible material. This means in the present case comprises the screen 31 which, as shown, preferably extends the full height of the inside of the container, so that all products of combustion and ignition or vaporized material must pass therethrough en route to the egress means from the container, comprising the hole or holes 8.

The screen 31 may be formed by cutting a suitable strip of screen of the desired width and stapling or otherwise securing the ends together to form an annulus of the desired diameter. The diameter of the screen collar thus formed is preferably sufficiently larger than the diameter of the fine hole area, so that all the products of combustion must pass through the screen as aforesaid.

In this form of the invention there is shown a different type of means for initiating the combustion of the cord 7. As shown a pull-wire fuse igniter 32, shown vertically disposed, is provided associated with an end 33 of the cord and crimped thereto as is conventional in attaching pull-wire igniters to blasting fuses. This igniter has the usual pull-wire 34 extending through an aperture in a wall, here shown as the top wall 24 of the container and arranged to be manually pulled to ignite the friction safety match composition in the igniter 32, which in turn ignites the cord with which it is associated.

Turning now to the form of the invention shown in Fig. 7, there is shown a container 34', which may be of substantially the same construction as the container 1 illustrated in Figs. 1 and 2 and the parts of which are hence given the same reference characters. In this form of the invention there is also shown the bottom liner 5,

although the side liner shown in Fig. 6 is omitted. This omission could be done in any case and particularly if the bottom portion 3 of the container were made of a non-metallic material, such as some organic plastic material having necessary rigidity but having relatively low heat conductivity as compared to metal. In this form of the invention there are shown two tiers or layers of cord 35 and 36, illustrating the general principle that any desired number of layers or tiers of the cord may be employed in order that a sufficient length of cord be provided to accomplish the desired purpose, the restriction on the relationship between the amount of cord provided and the volume of the container still holding, however, at least as to the preferred form of the invention.

Here again an end 33 of the cord is also provided with a pull-wire igniter 32 which, however, in this form, is shown generally horizontally disposed inside the container. This is in a different position than the form of Fig. 6, the position being determined by the size of the container. In this form the pull-wire 34 is passed through an aperture in the side wall of the container and as shown is optionally connected to a suitable gripping member 37.

A principal difference between the form of Fig. 7 and those of Figs. 2 and 5 is the character of the baffle means used intermediate the burning zone and the point or means of egress of products of combustion and vaporized chemical agent from the container. In Fig. 7 a flat piece of wire screen shown at 38 is provided which has a total area greater than that of the group of holes 8 shown. This screen is supported upon the upper portions of the coils 35 and 36 and thus is horizontally disposed below a group of holes 8, so that combustion products and other gaseous or vaporized materials must pass through the screen prior to their emission from the container. It has been found that a square flat screen filter of suitable size is most economical for this purpose.

In addition to the screen, the egress of burning particles is effectively prevented by the flange portions 9 formed around the holes as shown in greater detail in Fig. 3. Thus the construction of Fig. 3 may apply to the holes of all forms of the invention.

In practice it is desirable that the holes 8 or groups of holes 18 be sealed by removable adhesive tape or other suitable material, so as to form a completely closed package and prevent damage, deterioration or undesired firing of the cord. When this is done, the material covering the holes should be removed prior to the use of the device.

Further, if desired, suitable insulating material such as corrugated fiberboard may be fastened to the outside bottom of the container in a manner not herein particularly illustrated for the purpose of preventing damage by heat of any furniture or other supporting surface on which the container may be placed during the combustion of the cord therein.

In a particular example using a specific type of cord as set forth in my prior application, Ser. No. 615,601, above referred to, a cord may be employed which will burn at the rate of about 5 to 10 seconds per foot if extended in a straight line in the open. When it is coiled and burned in containers as hereinafter described, the burning time for a 25 foot length of cord may be only 20 to 60 seconds. By this intercommunication of adjacent lengths of cord during burning, a high concentration of the vapor of the active chemical ingredient, such as "DDT," can be produced and distributed in a very short time. It is recommended, for example, that a 25 foot package of "DDT" type of cord be used to treat a room having 1500 cubic feet for control of free flying insects and that two packages or a double dose be used when it is desired to kill crawling insects, larvae, etc. It has been found that a 1500 cubic foot room will be uniformly filled with vapor five minutes after the burning has been initiated. The concentration of "DDT" vapor in the air produced in using this example circulates and deposits upon the surface of the room and articles therein. After one-half hour the effect of the vapor as such gradually declines and the chemically active material is practically all deposited at the end of two hours. In comparison, the vapor from a "DDT" spray or aerosol bomb is entirely deposited in 20 to 30 minutes. In accordance with the present invention this longer period of vapor activity produces a fumigation and in addition causes a more uniform and complete deposit of the active material which penetrates all openings that are accessible to air circulation. Also with the present invention the "DDT" vapor causes a satisfactory knock-down of flies which result is not obtained by the use of "DDT" alone from sprays or aerosol bombs. For this reason the prior art has resorted to admixtures of other toxicants such as pyretheum in order to secure rapid knock-down of flies and other insects. This has been found to be unnecessary when using the device of the present invention.

While there is herein shown and described but a few of the possible embodiments of the present invention, it will be understood that other variations may be made within the teachings herein set forth. I do not wish to be limited therefore except by the scope of the appended claims, which are to be construed validly as broadly as the state of the prior art permits.

What is claimed is:

1. As an article of manufacture, a substantially closed container of non-combustible material, a predetermined length of a combustible cord-like element containing a heat-vaporizable active chemical agent and an oxygen-sufficient combustible composition disposed inside said container, at least one opening in said container for the emission of vapor of said chemical agent and gaseous products of combustion, means operable from outside said container for initiating the combustion of said cord-like element, and means disposed between said opening from said container and said burning zone for preventing solid particles resulting from the combustion of said cord-like element from passing out of said container.

2. As an article of manufacture, a substantially closed container of non-combustible material, a predetermined length of a combustible cord-like element containing a heat-vaporizable active chemical agent and an oxygen-sufficient combustible composition disposed inside said container, at least one opening in said container for the emission of vapor of said chemical agent and gaseous products of combustion, means operable from outside said container for initiating the combustion of said cord-like element, heat insulation between the burning zone inside said container at which said cord-like element is located and the bottom and sides of said container, and means disposed between said opening from

said container and said burning zone for preventing solid particles resulting from the combustion of said cord-like element from passing out of said container.

3. As an article of manufacture, a substantially closed container of non-combustible material, a predetermined length of a combustible cord-like element containing a heat-vaporizable active chemical agent and an oxygen-sufficient combustible composition disposed inside said container, at least one opening in said container for the emission of vapor of said chemical agent and gaseous products of combustion, baffle means horizontally disposed below and in substantially vertical alignment with any and all openings formed in the top of the container for the egress of products of combustion and vaporized chemical agent, so as to require the materials passing out of said container upon the use thereof to take a circuitous path inside said container, and means operable from outside said container for initiating the combustion of said cord-like element.

4. As an article of manufacture, a closed substantially cylindrical container of non-combustible material, a predetermined length of a combustible cord-like element coiled as an annulus inside said container in a coil substantially concentric therewith, said cord-like element containing a heat-vaporizable active chemical agent and an oxygen-sufficient combustible composition, a screen in the form of a hollow cylinder disposed inside said container and inside said coil of the combustible cord-like element and with the axis of said hollow cylinder substantially concentric with that of said container, said screen extending for substantially the full height of the inside of said container, at least one opening in the central portion of the top wall of said container and located opposite the inside of said hollow cylinder for the emission of products of combustion and vapors of said chemical agent, whereby all the products of combustion and vaporized chemical agent must pass through said screen in moving from their place of generation to the outside of said container, and means operable from outside said container for initiating the combustion of said cord-like element.

5. As an article of manufacture, a substantially closed container of non-combustible material, a predetermined length of a combustible cord-like element containing a heat-vaporizable active chemical agent and an oxygen-sufficient combustible composition disposed inside said container, at least one opening in said container for the emission of vapor of said chemical agent and gaseous products of combustion, means operable from outside said container for initiating the combustion of said cord-like element, and a fine wire screen disposed substantially horizontally inside said container below the means for egress of said products of combustion and vaporized chemical agent and of greater area than that included within a perimeter defining said means of egress, so that substantially all products of combustion and vaporized chemical agent must pass through said screen intermediate their place of generation and the outside of said container.

6. As an article of manufacture, a substantially closed container of non-combustible material, a predetermined length of a combustible cord-like element containing a heat-vaporizable active chemical agent and an oxygen-sufficient combustible composition disposed inside said container, a plurality of holes formed in the top wall of said container, said holes each having a diameter from about 0.01 to about 0.20 inch, whereby the small size of the holes is effective substantially to prevent passage of flame and burning particles to the outside of said container, said holes collectively constituting a means of egress for products of combustion and vaporized chemical agent generated in said container during the use thereof, and means operable from outside said container for initiating the combustion of said cord-like element.

7. As an article of manufacture, a substantially closed container of non-combustible material having a predetermined length of a combustible cord-like element containing a heat-vaporizable active chemical agent and an oxygen-sufficient combustible composition disposed inside said container, said container having a metallic top wall, a plurality of small openings each formed in the top wall of said container by punching the metal thereof inwardly to produce a small aperture surrounded by an inwardly projecting flange-like portion, whereby the flange portions surrounding said apertures tend to prevent egress of burning solid particles during the use of the device, and means operable from outside said container for initiating the combustion of said cord-like element.

8. As an article of manufacture, a substantially closed container of non-combustible material, a predetermined length of a combustible cord-like element containing a heat-vaporizable active chemical agent and an oxygen-sufficient combustible composition disposed inside said container, at least one opening in said container for the emission of vapor of said chemical agent and gaseous products of combustion, and ignition means comprising a pull-wire igniter which is associated with one end of said cord-like element and which includes a pull-wire for initiating the operation thereof, said pull-wire extending through an aperture in a wall of said container so as to be accessible for operating said igniter exteriorly of said container, said article as manufactured including pervious sheet means providing a plurality of small holes through which the vapors and gases produced by the combustion of said cord-like elements must pass in their flow to the outside of the container for preventing the passage of flame and burning particles to the outside of said container.

9. As an article of manufacture a closed, substantially cylindrical, sheet metal container, a predetermined length of a combustible cord-like element coiled as an annulus inside said container in a coil substantially concentric therewith, said cord-like element containing a heat-vaporizable, active chemical agent and an oxygen-sufficient combustible composition, heat insulation intermediate the coil of said cord-like element and the sides and bottom of said container, a screen in the form of a hollow cylinder with its axis substantially concentric with that of said container disposed therein inside said coil, said screen extending for substantially the full height of the inside of said container, said container including a top wall provided with a group of holes located opposite the inside of said hollow cylinder, each of said holes being formed therein by punching the metal of the top wall inwardly to produce a small aperture surrounded by an inwardly projecting flange-like portion, whereby these flange portions tend to prevent egress of solid particles from said container during the use of the device, and a pull wire igniter associated with one end of said cord-

like element and having a pull-wire extending through a wall of said container so as to be accessible exteriorly thereof for initiating the operation of said igniter and thereby for igniting said cord-like element.

10. As an article of manufacture a closed, substantially cylindrical, sheet metal container, a predetermined length of a combustible cord-like element coiled as an annulus inside said container in a coil substantially concentric therewith, said cord-like element containing a heat-vaporizable, active chemical agent and an oxygen-sufficient combustible composition, heat insulation intermediate the coil of said cord-like element and at least the bottom of said container, said container including as a means of egress of products of combustion and vaporized chemical agent a group of holes in the top wall, each of which holes is formed by punching the metal of the top wall inwardly to produce a small aperture surrounded by an inwardly projecting flange-like portion, whereby these flange portions tend to prevent egress of solid particles from said container during the use of the device, a flat-wire screen supported upon the coiled cord-like element and disposed substantially horizontally below the means for egress of said products of combustion and vaporized chemical agent and of greater area than that included within a perimeter defining said means of egress, so that substantially all the products of combustion and vaporized chemical agent must pass through said screen intermediate their place of generation and the outside of said container, and a pull-wire igniter associated with one end of said cord-like element and having a pull-wire extending through a wall of said container so as to be accessible exteriorly thereof for initiating the operation of said igniter and thereby for igniting said cord-like element.

11. A device for dispensing toxic material which comprises a can that is circular in cross-section, having a perforated top with an unperforated portion adjacent the wall of said can and an opening larger than one of said perforations in said top closer to the wall of said can than any of said perforations are and a coil of combustible material containing toxic material adjacent the inside wall of said can with one end thereof extending through said opening and means to space said coil from the bottom of said container.

12. A device for dispensing toxic material which comprises a can that is circular in cross-section having a perforated top with an unperforated portion adjacent the wall of said can and an opening larger than one of said perforations in said top closer to the wall of said can than any of said perforations are and a coil of combustible material containing toxic material adjacent the inside wall of said can with one end thereof extending through said opening, means to space said coil from the bottom of said container and a corrugated baffle in said can below the perforations in said top.

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