Feb. 16, 1937. H. K. McCONNELL 2,071,171

FUMIGATING PACKAGE

Filed June 15, 1935

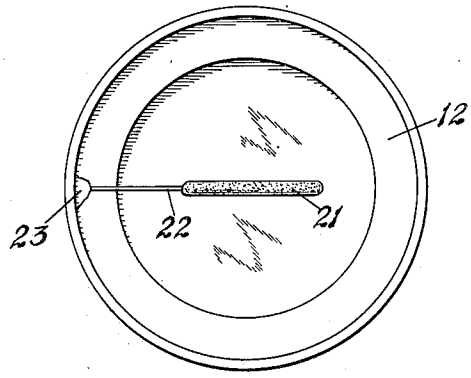


Fig. 1.

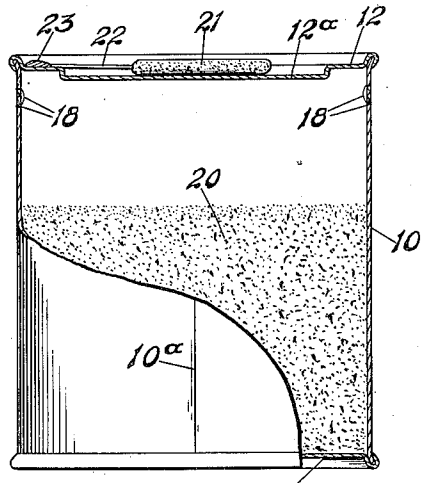


Fig. 2.

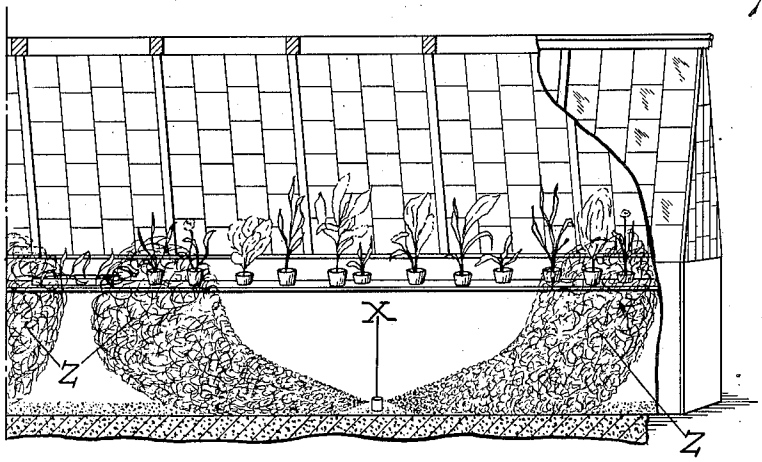


Fig. 5.

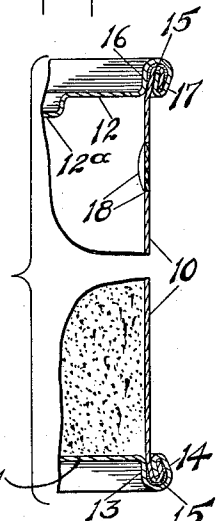


Fig. 6.

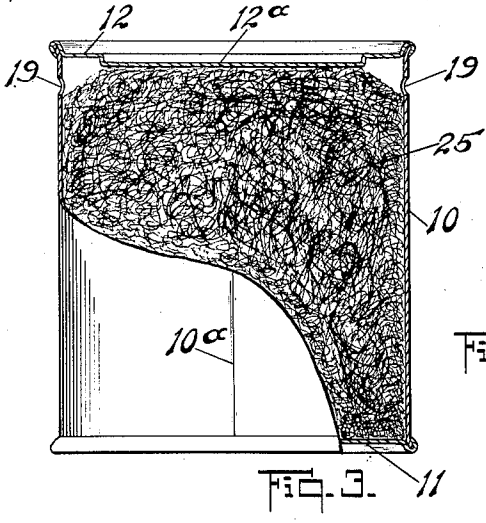


Fig. 3.

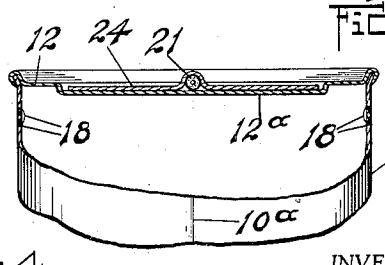


Fig. 4.

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Patented Feb. 16, 1937 2,071,171

UNITED STATES PATENT OFFICE

2,071,171

FUMIGATING PACKAGE

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Application June 15, 1935, Serial No. 26,713

8 Claims. (Cl. 21—111)

The present invention relates to a fumigating package particularly suitable for fumigating enclosed spaces with the vapor from parasiticide materials of such a nature that they, when subjected to heat, will give off a parasiticidal vapor. There are a number of such parasiticides, such as, for example, nicotine, anabasine, pyrethrum, derris, naphthalene, thiocyanates, and sulphur. The fumigation package of this invention is especially advantageous when the parasiticide is one sensitive to oxidation during storage and transportation, which is particularly the case with nicotine and, to an important extent, with pyrethrum. Such a package, in its best embodiment, is particularly advantageous for use in fumigating greenhouses, as will more fully appear from the description hereinafter, and is of essential importance where the parasiticide is one which evolves nicotine vapor.

It has been common in the prior art to prepare a tobacco dust fumigating material, sometimes surcharged with potassium nitrate and with a volatile nicotine compound. Such a dust is used particularly for fumigating greenhouses for the purpose of killing certain insects. In using such a dust, which generally is in bulk packages, it is customary to arrange the dust in one or more piles, these piles, where more than one is used, being distributed at several points on or near the floor of the greenhouse. Then the piles are ignited seriatim as rapidly as possible. The fumes from each pile spread relatively slowly in all directions, a large part traveling along the ground or surface on which the material is burned. It has been found that a substantial portion of the nicotine from fumes contacting with the ground, or said surface, is rapidly condensed and absorbed by the surface area with which the fumes contact, such nicotine being thereby lost. Such losses have been found to amount to as much as 37½ per cent of the total nicotine originally in the dust.

It has been proposed heretofore to pack the dust in individual containers, the amount of dust in each being about equal to that used in each one of the individual piles heretofore discussed. The container, usually a tin can, with a friction lid, had a hole at the top through which the fumes escaped in an upward direction, spreading laterally as they arose, to form a conoidal body of fumes. Owing to the fact that the opening in the receptacle was at the top, the fumes went directly to the greenhouse roof and as such roofs are generally leaky, so far as gases and vapors are concerned, a far from negligible proportion of the fumes escaped to the outside air, this loss being greater, the greater the velocity with which the fumes struck the underside of the greenhouse roof, which velocity depends upon the area of the top opening in the receptacle relative to the area of combustible surface within the receptacle, and upon the rapidity of combustion, which is determined by the relative proportions and composition of the burning material.

In addition to the above-mentioned disadvantages, there has been the further objection that the fumes produced were what might be termed heavy, that is to say, had an undue tendency to settle down to the ground promptly, this being due to the fact that the particles which constitute the fume or smoke are larger than is desirable and hence tend to settle out of the colloidal suspension and carry along some of the effective fumigant even if the latter is in vapor form.

Another objection relating to nicotine fumigants has been the deterioration in storage and transport of the dust, due to the escape of nicotine vapor and the oxidation of the nicotine in the dust. In usual commercial practice, fumigants such as nicotine have been sold in ordinary packages containing five or ten pounds. The entire contents of these packages are not necessarily used at one time so that the unused portion may be on hand for some days or weeks thus losing in parasiticidal value, because after opening, the fumigants in such ordinary packages deteriorate quite rapidly.

It is the object of the present invention to overcome the above disadvantages and to make the process of fumigation simpler and more convenient for the user.

With these objects in view the invention, broadly considered, consists in a package, including a container of metal, which is absolutely hermetically closed against admission of air and, therefore, against escape of any volatiles such as nicotine, this container having a few laterally arranged scorings, which are readily punched in to leave substantially regular openings of a predetermined size, located below the top of the container at a predetermined distance, the container enclosing a body of a special granular material of the type hereinafter mentioned, which does not fill the container completely, but which, when the package is placed on a horizontal surface, will have a substantially horizontal surface in a plane a predetermined distance below any hori-

zontal plane passing through any of the said holes. It is an important feature of the present invention that the dust material in the container is a combustible material containing a parasiticidal fumigant, and more particularly one suitable for plants, for example, a fungicidal or an insecticidal fumigant, such as pyrethrum, anabasine, derris, naphthalene, thiocyanates, and sulphur but most particularly nicotine, the whole mass being relatively low in moisture content and, in the best embodiment, as near to absolutely free from moisture as can be obtained in regular commercial practice; that is to say, it is an advantage to have the moisture below 1% and most advantageously .35% to .45% in order to prevent oxidation or decomposition of the parasiticide material during storage and transportation, this being particularly important with nicotine because it is so sensitive to oxidation.

In the best embodiment of the invention, the package includes an ignition device detachably secured to the outside of the container so as to constitute a unitary part of the package in storage and transportation, but being readily detachable from the container, this igniter being ignitable by, for example, the flame of a match, and easily inserted by hand through one of the openings in the container to ignite the combustible material.

The invention will now be described more particularly in connection with the accompanying drawing illustrating its most advantageous embodiment so far as now known to me.

In the drawing,—

Fig. 1 is a top plan view of a package, showing an igniter in place thereon;

Fig. 2 is a side elevation of a package partly in section; the seams at the top and bottom being merely diagrammatic, as the scale is too small to show all the details of said seams.

Fig. 3 is a similar view of the remains of a package after it has been used; the top and bottom seams being diagrammatic only.

Fig. 4 is a detail view of the upper part of the container illustrated in Fig. 1; again having only a diagrammatic view of the seam between the wall and the top or lid.

Fig. 5 is a diagrammatic view illustrating the manner of using the package for fumigating a greenhouse, and

Fig. 6 is an enlarged detail sectional view hereinafter referred to, and particularly intended to show the details of the rolled seams at the top and bottom of the container, which could not be properly illustrated in Figs. 2, 3 and 4.

Referring to the drawing, **10** illustrates the wall of a container, in this case made cylindrical; **11** is the bottom and **12** the top of the container. The container has its wall, top and bottom made of metal, and for reasons of economy is advantageously made of tin plate in about the same manner as an ordinary fruit or tomato can, in order to utilize modern can-making machinery. The present container is of the best type of such cans, in that dependence is not placed wholly on the usual lock and rolled seams alone, as it has been found that while such seams may be liquid-tight, they are usually not gas or air-tight. In such fruit or tomato cans the cylindrical wall is made from a sheet of tin plate rolled to cylindrical form, with its meeting ends joined by a lock-joint which is firmly rolled down and in that condition is not really air-tight. Therefore, in the best cans, the lock-seam of the wall, indicated at **10***a*, Fig. 2, must be made absolutely air-tight by some additional means, for example, by soldering the lock-seam. Furthermore, the bottom is put on with a rolled lock-seam. To accomplish this purpose the bottom is made with a channel around its edge, which projects below the lower surface of the bottom and in its final position has its outer wall projecting upward to a point about at the top surface of the bottom and then bent inward and down, to engage the upturned end of the side wall, as shown in Fig. 6. In making the receptacle, this bottom seam is rolled to press the interlocked parts together and simultaneously to flare the included portion of the cylindrical wall of the container outward and give the channel walls a corresponding slope, thus firmly locking the bottom in place. This rolled joint is ordinarily not soldered, but the rolled seam connecting the bottom to the wall of the can is modified by the insertion of a packing layer compressed between the wall of the can and the bottom.

The details of the joint or seam at the bottom of such a can of the best type will be clear from Fig. 6, wherein the bottom **11** is shown with its usual channel having a downward-extending wall **13** and an upward-extending wall **14**, whose edge is hooked over the upturned edge formed at the lower end of the side wall **10**. The two walls **13** and **14** are joined at the bottom, as shown. The lower end of the cylindrical wall **10** of the can is given a coating of an elastic material, such as latex, or such an elastic material in liquid form is painted into the channel and, after it has set, the lower end of the cylindrical wall is inserted in the channel of the bottom, and the said channel walls are rolled to press the interlocked parts together and to compress the elastic material, indicated at **15**, Fig. 6, firmly between the metallic parts. At the same time the lower end of the can wall is flared outward somewhat as shown in Fig. 6.

The top **12** of the can is made to fit to the wall with a joint or seam like that at the bottom, as will be clear from Fig. 6, where **15** is the latex, or similar packing, and **16** and **17** are the walls of the channel. After the can has been supplied with its charge of fumigrating material, the top or cover is put in place in the same manner and by the same kind of joint as is the bottom, including, of course, the elastic packing, such as latex.

These details of construction of the can are important in carrying out the present invention, because the commercial type of can cannot be satisfactorily employed unless absolutely air-tight. It has been found that fumigating dust containing a volatile parasiticide, such as nicotine, if enclosed in a can having only a trifling leak, and stored for some months, will when analyzed show a loss of nicotine, due either to escape from the can or to destruction by oxidation in the can, or both. With a can of this type, an action called "breathing" takes place. That is, there may be an inflow of outside air or an outflow of inside vapors with barometric and thermal changes of the outside atmosphere.

The commercial can above described is modified by providing its wall **10** with a portion which is readily destructible. This is best accomplished by providing the wall with scorings, that is to say, with lines of weakness stamped or pressed in the metal, as indicated at **18**, Fig. 2, in order that the metal inside the scoring may be forced inward, for example, with a nail and hammer, and will tear loose from the wall along the

weakened line to leave a fairly uniform hole, such as is indicated at 19, Fig. 3. In practice each scoring is circular and these scorings are located a short distance below the top of the can. The area of the opening, produced by knocking in the wall within the scoring, has a predetermined relationship to the cross-sectional area of the can, as will be pointed out hereinafter. In the best embodiment of the invention shown in the drawing, there are two scorings for holes, these scorings being located at opposite ends of a diameter of the cylindrical wall.

Before the lid or top 12 is put in place, the can is charged with a substantially anhydrous fumigating material, indicated at 20, Fig. 2, the ingredients and their proportions being related to the size of the receptacle and to the total area of all the discharge openings so that a proper pressure will be developed and maintained for a time in the receptacle during combustion of the fumigating material, to drive the fumes laterally through the openings to a considerable distance from the receptacle. Furthermore, it is one of the important features of the present invention that the combustion takes place in what may be termed a non-oxidizing flameless manner in order that the nicotine vapor, as it arises with the fumes, will not be oxidized, or at least not to any appreciable extent.

In the embodiment of the invention illustrated in the drawing, the lid or top 12 has a central depressed portion, indicated at 12a, Fig. 2, for a purpose hereinafter described.

The fumigating material comprises a comminuted, well-dried tobacco material, an oxygen-supplying material, such as potassium nitrate or sodium nitrate, and free nicotine, which is as near to being absolutely anhydrous as can be obtained in practice.

In the best embodiment of the invention the final product as supplied to the cans has the following composition:

Comminuted tobacco material, dry weight	87.7 parts or	66.94%
$NaNO_3$	25.5 parts or	19.46%
Substantially anhydrous nicotine material 98% nicotine, 2% gums and oils	17.8 parts or	13.60%
	131.0	100.00%

As the tobacco material contains about 0.9% of nicotine, the total nicotine content is at least 14.5%.

In preparing the tobacco material, a tobacco dust is used of the general type employed as a base for dust insecticides. It has been found advantageous for this invention to have the dust made up of particles of approximately the following screening analysis:

0.2% (by weight) remaining on 20 mesh
5.5% (by weight) remaining on 40 mesh
15.3% (by weight) remaining on 60 mesh
13.5% (by weight) remaining on 80 mesh
8.5% (by weight) remaining on 100 mesh

This dust usually carries a small percentage of water. The sodium nitrate, which should be the refined non-hygroscopic material, is dissolved in water and the tobacco dust is wetted with it as uniformly as possible. In this way the alkali nitrate is uniformly distributed on the tobacco particles and into the pores of the same. The mixture is then thoroughly dried to as near an absolutely anhydrous condition as can be obtained in practice, certainly below 1% and best to .35 to .45% moisture, and is granulated and sifted.

The nicotine material, which must be substantially free of all moisture and which generally contains about 98% nicotine and about 2% of impurities, such as gums and oils, is added to the thoroughly dried tobacco material and the whole well stirred to insure a proper mixture. Then while the product is still substantially anhydrous, and without undue exposure to the air, it is run into the receptacles to a predetermined height, whereupon the cover, lid or top is put on, pressed down and the seam rolled, thus effectively sealing the container hermetically, owing to the latex packing, hereinbefore described.

In preparing fumigating material as above described, in the proportions given in the formula, it is usually sufficient to employ 90 parts of the usual commercially dried tobacco dust, in which the moisture is generally about 7.5%, as a starting ingredient. The moisture is driven off, together with the water added as a solvent of the alkali nitrate, at the final drying of the completed mixture, which is done before the nicotine is added.

The package, made as above described, may be kept on hand for a long time without serious deterioration of the nicotine, because of the absence of moisture in the container and because of the substantially perfect hermetical sealing of the container. With a hermetically sealed metal can and substantially anhydrous material, the package may be handled and transported without special care and the contents will retain their effective strength for a long time.

To use the package for fumigating, the metal disks within the scorings are driven inward, as, for example, by using a punch, or even an ordinary nail, and hammer. On account of the scorings, the disks break away from the remainder of the wall to leave openings which are fairly regular in size and shape. The package is then placed in a suitable position which may be directly on the floor of the greenhouse or elevated above the floor on a suitable support, if desired. Then the fumigating material within the receptacle is ignited. This can be done in several ways, one of which is to hold a good heating device, such as the flame of blast torch, against the side of the receptacle, about at or slightly below the plane of the top of the body of fumigating material, but considerably away from the holes, so that the flame of the torch will not enter the holes. The exteriorly applied flame of the torch first carbonizes the fumigating material and then ignites it without the presence of a flame inside the receptacle. As a blast lamp or torch is not always convenient, another method of ignition is to employ a flameless incandescent ignition device, which can be inserted through one of the holes and if desired, dropped inside the receptacle and left there. At Figure 2 is illustrated a lighter or ignition device which is very satisfactory. This comprises a piece of wire, one end of which serves as handle 22, while its other end is embedded in a generally cylindrical mass of ignition material which can be lighted outside the receptacle with a match, and then begins to glow or incandesce without producing flame. The ignition material in general use is a mixture of aluminum metal, finely powdered iron, and barium nitrate, all in finely comminuted form, with a suitable binder, for example, gum or glue. With a lighter of this type, the

user, holding the igniter by its handle end, ignites it in any suitable way, for example, with a burning match. The igniter is then pushed through one of the holes in the receptacle and allowed to swing down into contact with the body of fumigating material.

Thereupon, the combustion commences inside the receptacle, and because of the restricted exits 19, Figure 3, for the fumes, a pressure is developed inside the receptacle, which drives the fumes out through the holes with a reasonable, but not too great velocity, so that they form jets of fume, as is indicated in a general way in Figure 5, where the package designated X is shown in operation in a greenhouse, the jets being invisible for a very short distance, and then rapidly expanding so that fine fumes are formed. As the velocity is lost, rising clouds are formed at the ends as indicated at Z. Experience has shown that one important advantage of the invention is that the fumes are of very fine particles so that they disperse with maximum rapidity, as compared with fumes such as are obtained from a pile of loose material. This difference in particle size is due to the production of a suitable pressure in the receptacle and the resulting sudden expansion of the fumes almost immediately after their escape from the respective knock-out holes of the receptacle. As the pressure is due to the rate of combustion of the materials in the receptacle, and as this rate will be slowed down in some ratio to the percentage of moisture in the materials, it is obvious that by the reduction of moisture to a small amount, and most advantageously to a minimum, a sufficiently rapid rate of combustion may be obtained with less alkali nitrate, or other oxygen-supplying material, than otherwise would be the case. In the best embodiment of the invention, the pressure in the receptacle at a maximum is between 1½ to 2 pounds per square inch above atmospheric, so that, with the receptacle described hereinabove, the fumes extend about ten to twelve feet in each direction from the discharge openings, while at the same time the escaping gases are invisible, or nearly so, for a distance of not exceeding one inch, the vapors then condensing so as to be visible. This is an important standard in case other sizes of receptacles are to be used, because the amount of the material and its composition may be adjusted to give the results described. Furthermore, due to the sudden cooling which takes place as a result of expansion, there is practically no danger of injury to plants which are close to the package during operation. It has been found that at a distance as close as two feet plants receiving the direct effect of the jet were not injured by heat of the fumes.

It has been found that the atmosphere in the receptacle may be said to be non-oxidizing, so far at least as nicotine or similar easily oxidized parasiticides are concerned, which is shown by the fact that the residue remaining in the receptacle, or container, is a body of porous carbon as indicated at 25, Fig. 3. If the top of the can shown in the drawing be cut off, by cutting through the upper end of the wall 10, the carbon body may be pulled out of the can in its entirety. That this body of carbon remains after the combustion, whereas in burning the piles of dust in the open air only a relatively small amount of ash remains, is evidence that the combustion in the receptacle of applicant's invention takes place with a restricted amount of oxygen and, therefore, the vapors, or fumes, existing within the receptacle during combustion, do not contain sufficient oxygen to destroy the nicotine, or at least not to any appreciable extent.

The reduction of the moisture in the fumigating material seems to have an important effect in avoiding oxidation of the nicotine during storage and transportation. Whether this is due to the fact that moisture may tend to bring the oxygen-supplying material and the nicotine into reactive contact by dissolving each to a slight extent, cannot be determined but is one explanation of the remarkably successful results obtained by the package constituting the invention.

In order to obtain the proper maximum pressure within the receptacle during combustion so that the fumes will be projected to a suitable distance while avoiding any danger of the receptacle bursting from the pressure, the cubical contents of the receptacle, the area of its horizontal cross-section, the total area of the discharge openings, the composition of the fumigant material and the sizes of the particles of the latter are intimately related, though some range in the various values is permissible. In the best practice, using a cylindrical can such as is used in the drawing, and with a fumigant material having its ingredients and their properties as hereinbefore set forth, it has been found that the can should have a diameter of 4.13 inches, a height of about 4.13 inches, and each of the two discharge holes, produced by knocking in the disks, should have a diameter of one-quarter of an inch. Also because the fumigant material swells during combustion, leaving a carbon cylinder inside having a height greater than that of the original body of fumigating material, the latter, when filled into the can and shaken down, should have its upper surface in a plane about 1.63 inches below the horizontal plane through the bottom of the discharge holes. The holes themselves are located below the upper edge of the can and while this may vary to a considerable extent, it has been found that it is advisable and convenient in manufacture to allow about three-sixteenths of an inch for this distance. Hence, the free space in the can when the lid is sealed in place has a height above the surface of the fumigant material of about 2 inches.

A receptacle having substantially the diameter and height hereinabove set forth is commonly designated as a one quart can.

It is to be understood that the receptacle may be made smaller, to hold a smaller amount of fumigating material, and successful results obtained, provided that the various relationships of total area of discharge openings, area of combustion surface and composition of the fumigating material are properly chosen to give the proper pressure within the receptacle and the rapid expansion of the fumes to cool them to visibility within about one inch or less of the discharge openings.

As hereinbefore stated, in the best embodiment of the invention, an igniter held in place on the outside of the receptacle, forms a part of the complete package. In order to permit the packages to be handled and piled without danger of displacing and losing the igniter, a wall of the receptacle is provided with a depression or recess to contain the igniter.

In the receptacle described, owing to the extension of the rolled rim at the top of the can and the depression formed in the central portion of the lid, as shown in Fig. 2, a space is provided

outside the top of the can in which an igniter may be placed and held to the can, in that modification of the invention where the igniter is an element of the complete package. The igniter 21 may be laid flat in the depression in the lid and its wire handle 22 secured to the undepressed margin of the lid by soldering, as shown in Figs. 1 and 2, or merely held in place by a securing device of flexible material such as a paper or thin cardboard disk, 24, Fig. 4, which is attached by suitable adhesive to the depressed portion of the lid, as shown in Fig. 4, the paper or cardboard looping over the igniter, as shown. In this case, the wire handle of the igniter need not extend outside the boundary of the depressed portion of the lid. Of course, the securing device 24 may have printing on its outer face and thus serve as a label for the end of the can. In practice it is customary to apply a label around the cylindrical wall of the can on the outside (not shown) but if this is done it is advantageous not to cover the scorings for the discharge holes.

By providing the lid of the receptacle with a depressed portion and locating the igniter therein, the latter is protected and the receptacles can be stacked one on another in the usual manner.

Instead of comminuted tobacco dust, which is very advantageous, other ground dried vegetable matter may be employed, but the amount of oxygen-supplying material must be altered correspondingly, because tobacco dust itself carries a fair amount of such oxygen-supplying material while most other readily available vegetable material does not. Although in the formula above given the oxygen-supplying material is sodium nitrate, this is only on account of economy, because other ingredients which will supply oxygen in the same manner as sodium nitrate are known to those skilled in the art, a notable example of which is potassium nitrate.

Applicant has very specifically described a metallic receptacle of tin, made by the usual can-making machinery. This is because the cost of the package must be kept within a reasonable price. It is to be understood, however, that a package having a metallic receptacle of some metal other than tin and with other forms of seams, or part seamless, will be satisfactory, so far as the transportation, storage and action during fumigation are concerned, provided such receptacle hermetically seals the fumigating material, has the knock-outs to form the discharge openings, and the proper relative proportions, hereinbefore explained, to give the jets described, but at the present time the cost of such other form of metallic receptacle might so materially increase the cost of the package as to be prohibitive.

It will be noted that the present package makes the process of fumigating so simple that it can be carried out rapidly even by unskilled labor, while at the same time attaining accuracy of dosage and reliability of results.

What is claimed is:

1. A fumigating package consisting of a hermetically sealed metallic receptacle having its vertical side wall scored to provide knock-outs, and a fumigant within and only partly filling the receptacle, the fumigant consisting of a combustible material, an oxygen-supplying material, and a parasiticide material which will evolve a parasiticidal vapor during fumigation.

2. A fumigating package consisting of a hermetically sealed metallic receptacle having its vertical side wall scored to provide knock-outs, and a fumigant within and only partly filling the receptacle, the fumigant having less than 1% moisture and consisting of a combustible material, an oxygen-supplying material, and a parasiticide material which will evolve a parasiticidal vapor during fumigation.

3. A fumigating package consisting of a hermetically sealed metallic receptacle having its vertical side wall scored to provide knock-outs, and a fumigant within and only partly filling the receptacle, the fumigant having less than 1% moisture and consisting of a combustible material, an oxygen-supplying material, and nicotine.

4. A fumigating package consisting of a hermetically sealed metallic receptacle having its vertical side wall scored to provide knock-outs, and a fumigant within and only partly filling the receptacle, said fumigant having a low moisture content and consisting principally of material having substantially the following composition:

Comminuted tobacco material, dry weight	87.7 parts	or 66.94%
$NaNO_3$	25.5 parts	or 19.46%
Substantially anhydrous nicotine material 98% nicotine, 2% gums and oils	17.8 parts	or 13.60%
	131.0	100.00%

said tobacco material containing at least 0.9% nicotine.

5. A fumigating package consisting of a hermetically sealed metallic receptacle having an imperforate portion of its exterior surface provided with a depression arranged to contain an igniter device isolated from the interior of the receptacle, said receptacle having its vertical side wall scored to provide knock-outs, a fumigant within and only partly filling the receptacle, the fumigant consisting of a combustible material, an oxygen-supplying material and a parasiticide material which will evolve a parasiticidal vapor, and an igniter device wholly contained within said depression in the receptacle and detachably secured to it, said ignition device being arranged to be inserted into the hole formed in the side wall when a knock-out is removed.

6. A fumigating package consisting of a hermetically sealed metallic receptacle having an imperforate portion of its end wall provided with a depression arranged to contain an igniter device isolated from the interior of the receptacle, said receptacle having its vertical side wall scored to provide knock-outs, a fumigant within and only partly filling the receptacle, the fumigant consisting of a combustible material, an oxygen-supplying material and a parasiticide material which will evolve a parasiticidal vapor, and an igniter device wholly contained within said depression in the receptacle and detachably secured to it, said ignition device being arranged to be inserted into the hole formed in the side wall when a knock-out is removed.

7. A fumigating package consisting of a hermetically sealed metallic receptacle having an imperforate portion of its exterior surface provided with a depression arranged to contain an igniter device isolated from the interior of the receptacle, said receptacle having its vertical side wall scored to provide knock-outs above the level of the contents of the receptacle, a fumigant within and only partly filling the receptacle, the fumigant consisting of a combustible material, an oxygen-supplying material and a parasiticide material which will evolve a parasiticidal vapor, and

an igniter device wholly contained within said depression in the receptacle and detachably secured to it, said ignition device being arranged to be inserted into the hole formed in the side wall when a knock-out is removed, said igniter device having a handle portion and a flameless incandescing portion.

8. A fumigating package consisting of a body of comminuted fumigant, having a moisture content of less than 1% and consisting principally of tobacco dust, alkali nitrate, and nicotine, and a hermetically sealed metallic receptacle completely enclosing the said body of comminuted fumigant and having a vertical side wall projecting above the top of said body of fumigant to provide an empty space within the receptacle, said vertical side wall above the level of the top of said body of fumigant being arranged to be readily perforable to provide restricted lateral passages between the empty space within the container and the atmosphere.

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