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EXPLOSIVE DEVICES FOR SPREADING INSECTICIDES AND THE LIKE

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FIG. 1.

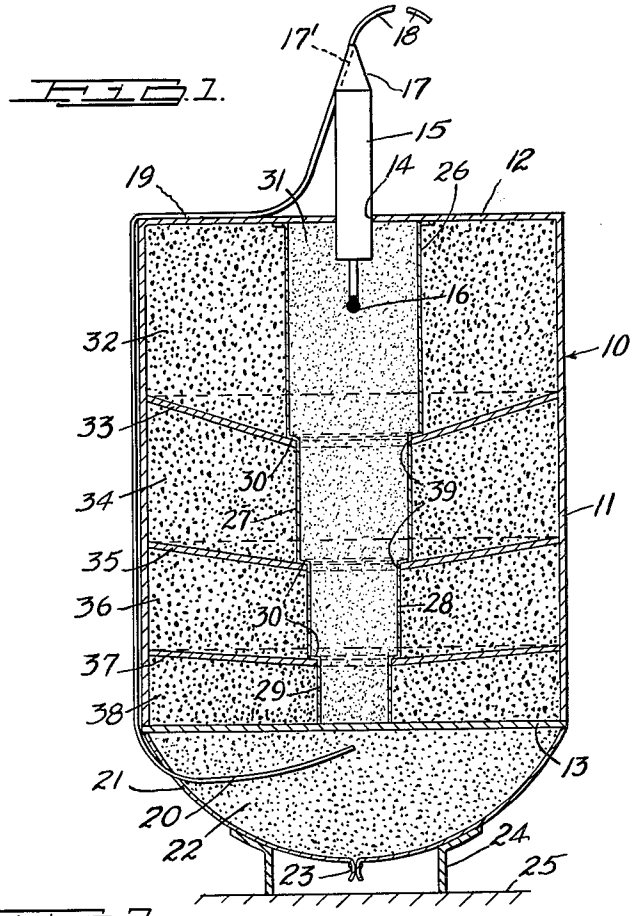
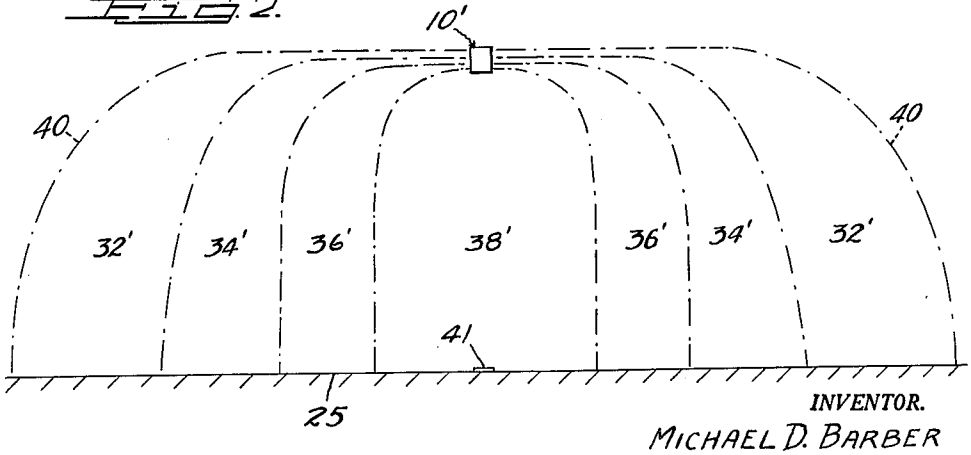


FIG. 2.



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EXPLOSIVE DEVICES FOR SPREADING INSECTICIDES AND THE LIKE

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1 Claim. (Cl. 102—7.2)

This invention relates to an explosive device generally referred to as a bomb. More particularly, the invention deals with a device of this type and kind having a special arrangement of elements for storage around a central bursting charge varied quantities of an insecticide or the like, whereby, in actuation of said bursting charge, the insecticide is widely distributed over a surface or area to be treated thereby.

Still more particularly, the invention deals with a device of the character described, wherein said elements are preferably metallic, so as to aid in absorption or dissipation of the heat of the bursting charge.

The novel features of the invention will be best understood from the following description, when taken together with the accompanying drawing, in which certain embodiments of the invention are disclosed and, in which, the separate parts are designated by suitable reference characters in each of the views and in which:

FIG. 1 is a diagrammatic sectional view through a bomb made according to my invention, with parts of the construction shown in elevation and illustrating a supporting stand for positioning the bomb upon a surface; and

FIG. 2 is a diagrammatic view illustrating distribution of the insecticide or the like in the bursting of the bomb.

In the diagrammatic showing of FIG. 1 of the drawing, 10 represents the casing of a bomb, comprising an outer annular wall 11 and what can be considered the top wall 12, particularly when the bomb is set for use, as diagrammatically illustrated in FIG. 1. These walls 11 and 12 are composed of readily rupturable material and may comprise paper wraps or thin paperboard. The lower end of the casing 10 is normally open and adapted to be closed by a bottom wall 13, generally of the same structure as the walls 11 and 12.

The top wall 12 includes, centrally thereof, an aperture 14, in which a time fuse 15 is mounted, the fuse having, at its inner end, what is generally known as a match 16 positioned centrally of the upper portion of the bomb. Fixed to the outer contracted end 17 of the time fuse 15 is a conventional fuse strip 18, the end of which has a sufficient length to enable the operator to get out of the path of operation of the device after the fuse 18 has been ignited. 18 extends into the conical end 17, as indicated at 17', to ignite the time fuse; whereas, 18 extends downwardly and is suitably fixed to the wall 12, as at 19. The same then passes downwardly along the outer wall 11 and the free end 20 extends into the paper or other flexible supplemental casing 21, in which a lifting charge 22 is arranged, the casing 21 being sealed, as diagrammatically illustrated at 23. The casing 21 is fixed to the lower portion of the casing 10 in any suitable manner and protrudes in a rounded fashion and, in use of the bomb, it is preferred that a metallic or other stand 24 be employed for support of the bomb in upright position above the ground, diagrammatically represented at 25.

In assembling the bomb, the casing 10, with the time fuse 15 suitably positioned therein, is supported in an inverted position, after which, a graduated diameter tube 26 is fixed centrally to the inner surface of the top wall 12 with the largest diameter of the tube positioned adjacent the wall 12. The next smaller diameter dimension of the tube is indicated at 27, the next smaller diameter at 28 and the final smallest diameter end at 29. These different diameter portions of the tube are joined by angular or bevelled seats or shoulders, as indicated at 30. The tube 26 can be composed of any suitable rupturable material. However, it is preferred that the same be made of thin metal foil such, for example, as aluminum foil, to aid in absorption and dissipation of the heat of a bursting charge 31 which is placed in the tube as supported upon the wall 12, this operation being performed prior to applying the bottom closure wall 13 to the casing 10.

The next step in the procedure consists in first placing an insecticide, fertilizer or the like in the casing around the tube 26 and, in doing this, one portion of the insecticide 32 is first arranged upon the bottom wall 12, after which, the conical-like partition element 33 is arranged upon the portion 32, then another insecticide portion 34 is arranged upon the element 33, another element 35 is arranged upon 34, then another portion 36 is arranged upon the element 35 and another element 37 is positioned upon the portion 36; whereupon, a final portion 38 is arranged upon the element 37; whereupon, the closure wall 13 is then applied and suitably sealed to the casing 10, after which, the supplemental casing 21 is attached and, when in open position, is filled with the lifting charge 22, the supplemental casing closed and sealed, as at 23, it being understood that the fuse end 20 is arranged in the casing 21, substantially as diagrammatically illustrated in the operation of placing the charge 22 in said casing. It will be apparent that all of the elements 33, 35 and 37 have central apertures 39 of different diameters to fit over the various reduced portions of the tube 26, so that the elements adjacent the apertures 39 can rest upon the shoulders 30.

By virtue of the varied length or depth and diameter of the stepped portions of the tube 26 and the conical inclination of the various elements 33, 35 and 37, the compartments storing the insecticide, fertilizer or the like, as at 32, 34, 36 and 38 materially vary in size so that a much greater amount of this material is stored at 32 and lesser amounts in the other compartments, it being understood that the illustration in FIG. 1 of the drawing is simply diagrammatic. Here, it is also apparent that associated with these various amounts of the material, the bursting charge 31 is proportionately varied, so that, when the casing portion 10 is raised by the lifting charge 22 a predetermined distance above the ground 25, diagrammatically illustrated in FIG. 2 of the drawing, as represented by the character 10' and this casing is exploded by the bursting charge, the latter controlled by the time fuse 15, the materials in the several compartments will be distributed generally in the areas between the dot-dash lines of FIG. 2, identified by the reference characters 32', 34', 36' and 38'. It will be understood that the degree of spread or the area of the surface 25 covered by the bursting charge and illustrated by the outermost dot-dash lines 40 of FIG. 2 will depend entirely upon the size of the bomb or the casing 10 thereof and the amount of material to be distributed. In what might be termed commercial uses, the distance between the dot-dash lines 40 could be in the neighborhood of two hundred or more feet; whereas, in miniature types of bombs or explosives which could be used in private homes in the spreading of insecticides or the like, the degree of spread between the lines 40 could be a matter of ten feet or more.

Devices of the type and kind under consideration are particularly desirable for use by farmers in the treatment of crops, fruit trees or the like or in the distribution of fertilizers, for treatment and feeding of large park lawns, golf course fairways and numerous other places of this

type and kind. In this connection, it will be understood that the lift or height of the bomb when the bursting charge is ignited will depend largely upon the type of treatment to be rendered as, for example, in various orchards where trees are to be treated, the bursting charge would take place anywhere from fifty to one hundred fifty or more feet above the ground.

In addition to preferably using the metal foil in the construction of the tube 26, the elements 32, 35 and 37 are also preferably constructed of metal and aluminum, for example, could be used and these metallic elements will also operate to absorb or dissipate the heat of the explosive charge, thereby preventing, or at least minimizing, the effect of this charge upon the insecticide or other materials operated upon in producing the spreading thereof, as referred to previously.

Devices of the type and kind under consideration can be economically produced and their use will effect a material saving in time and labor in accomplishment of the desired end result.

In the illustration of FIG. 2, I have diagrammatically illustrated at 41 what would doubtlessly be the positioning of the several elements 33, 35 and 37 after the bursting charge has been ignited. These elements would be forced downwardly, generally in a central position of the area 38' and this downward draft would tend to draw the material 38 centrally of the area 38' to provide a substantially complete distribution of the material 38 in said area 38'. However, if a small central portion of the area 38 should not be covered, this could be easily cared for by an operator in renewal of said elements.

The material to be spread by the bursting charge may be said to comprise a treating material and, for general reference, the term "powdered" will be understood to cover any type or kind of material in reasonably small particles, this being particularly true with fertilizing material; whereas, the insecticides can, for the most part, be in the form of fine powder-like material and the latter would be especially true in using lime for the treatment purpose.

Having fully described my invention, what I claim as new and desire to secure by Letters Patent is:

An explosive treatment material spreading device comprising a casing, a tube centrally of and extending the full length of the casing, said tube supporting a bursting charge, a powdered treatment material in said casing around said tube, a time fuse on said casing and extending into the upper end of said tube to ignite the bursting charge therein, means for supporting a lifting charge at the lower end of said casing, a long fuse contacting said lifting charge and arranged outwardly of the casing and extending to said time fuse for igniting said time fuse and said lifting charge to further elevate said casing and then burst said casing in widespread distribution of said treatment material, the casing outwardly of said tube having vertically spaced partitioning means varying quantities of treatment material from greater at the top to less at the lower portion of the device, and said tube being shaped vertically to provide a greater bursting charge at the top of the device than at the lower portion thereof consistent with the varied quantities of treatment material in the device.

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CERTIFICATE OF CORRECTION

Patent No. 3,110,256 November 12, 1963

Michael D. Barber

It is hereby certified that error appears in the above numbered patent requiring correction and that the said Letters Patent should read as corrected below.

In the grant, line 3, for "Bernard G. Nemenoff, of New York City" read -- Bernard G. Nemeroff, of New City --; in the grant, line 13, and in the heading to the printed specification, lines 6 and 7, for "Bernard G. Nemenoff", each occurrence, read -- Bernard G. Nemeroff --.

Signed and sealed this 28th day of April 1964.

(SEAL)
Attest:

ERNEST W. SWIDER

Attesting Officer

EDWARD J. BRENNER
Commissioner of Patents