Aug. 8, 1944. R. J. WHITE 2,355,127

DUST GUN

Filed June 7, 1941 2 Sheets-Sheet 1

Fig 1

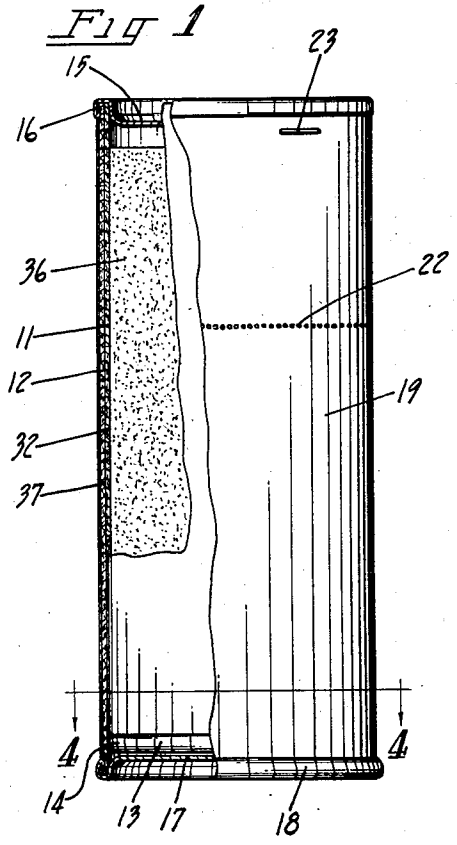


Fig 3

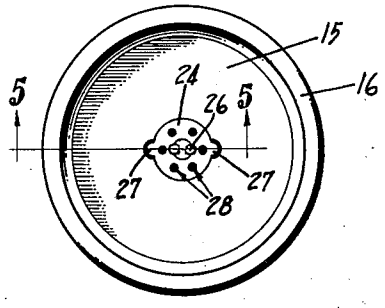


Fig 2

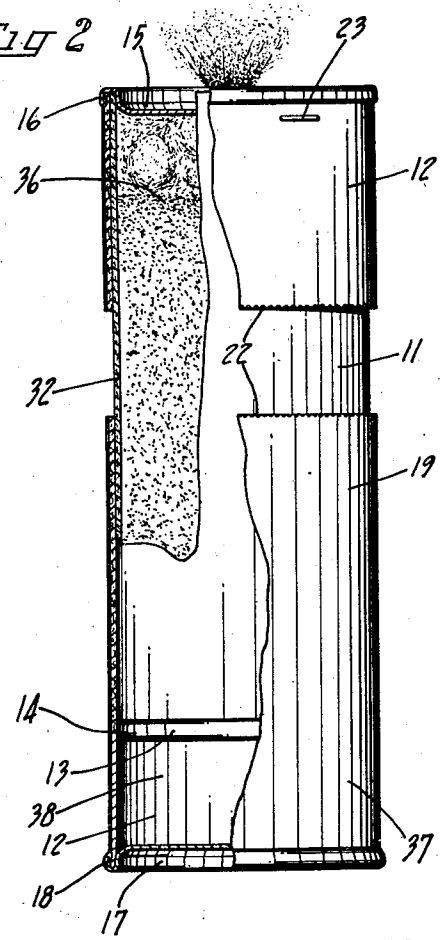
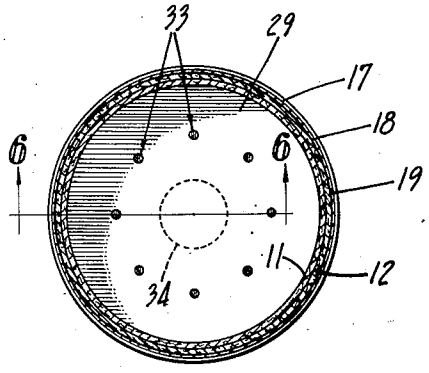


Fig 4



INVENTOR.
Richard J. White
BY Ivan D. Thornburgh
Chas. H. Erne
ATTORNEYS

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Filed June 7, 1941 2 Sheets-Sheet 2

Fig 5

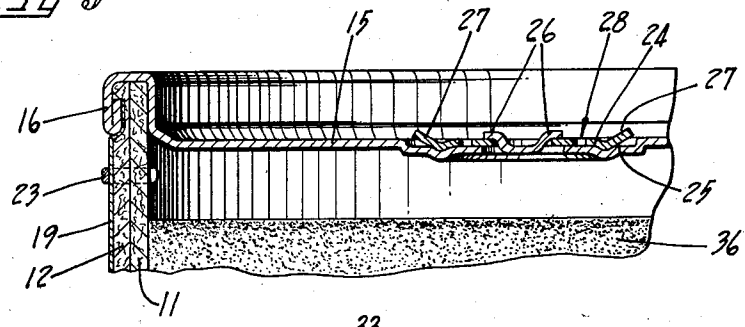


Fig 6

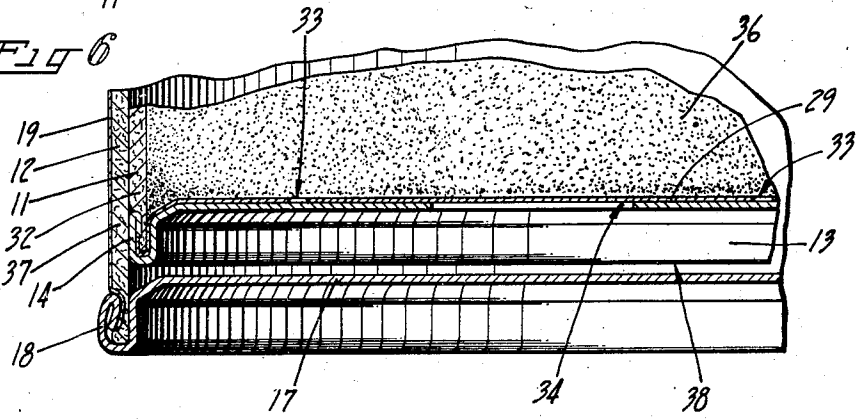


Fig 8

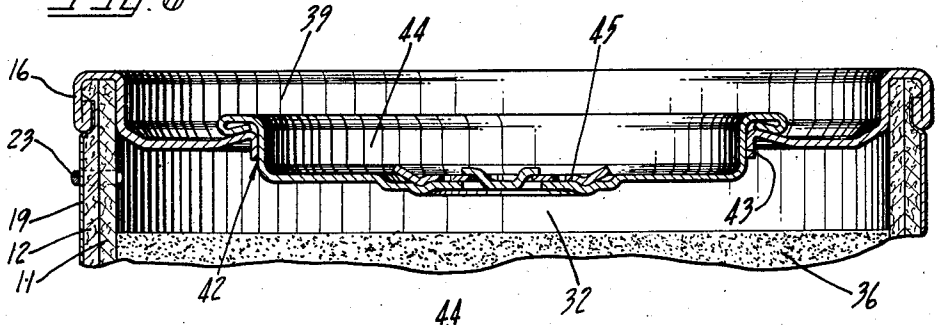
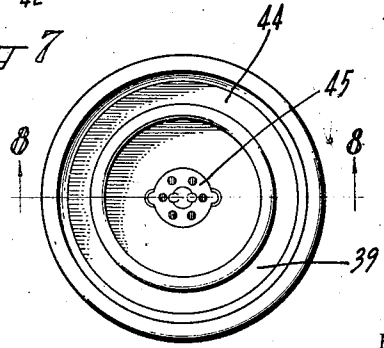


Fig 7



INVENTOR.
Richard J. White
BY Ivan L. Thornburgh
Chas. H. Erne
ATTORNEYS

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UNITED STATES PATENT OFFICE

2,355,127

DUST GUN

Richard J. White, New York, N. Y., assignor to American Can Company, New York, N. Y., a corporation of New Jersey

Application June 7, 1941, Serial No. 397,120

2 Claims. (Cl. 43—147)

This invention relates to receptacles and the like for the storage and dissemination of insecticidal dust or powders and has particular reference to a combination telescopic container or dust gun which may be used for any purpose where finely divided pulverulent materials are distributed in diffused form.

In dust guns or spraying devices which are used for the distribution of dust and powders, it is essential that the device be of such construction that a reciprocating movement of a plunger element will cause the dust or powder within the device to be emitted in the form of a cloud. To accomplish this it is necessary that the air be forced into a cartridge portion of the device containing the powder and under such conditions that a combined mixture of powder and air will be expelled under pressure from the device.

This is accomplished in the present invention by a reciprocating movement of the pump chamber under conditions which allow the passage of air between the plunger element containing the pump chamber and the cartridge containing the powder during a withdrawing or charging movement and will, during an opposite or compression movement, force the air into the powder and set up a mixture of air and powder which is then expelled from the device in a cloud or mist of the mixture which is deemed essential to procure a maximum coverage for the extermination of insects, bugs and the like.

An object of the invention is the provision of a telescopic compartment container which comprises a storage space or cartridge for holding a supply of powder or dust and a pump chamber which is adapted for movement with respect to the powder cartridge as a pump gun to create a charge of air which is forced into and through the powder and which sets up a turbulence of air and powder which mixture is expelled as a cloud through a perforated wall of the powder cartridge.

Another object of the invention is the provision of such a powder dispenser wherein the supply cartridge is arranged with a flexible perforated disc at one end which acts as a valve to emit air into the powder supply but which when the valve is closed prevents the leakage of powder from the inner container.

Another object of the invention is the provision, in the dust gun or powder dispenser of the character described, of a construction wherein the discharge end of the supply cartridge is equipped with a rotatable dredge top having a plurality of perforated dispensing openings therein which may be opened by simple rotary movement of the dredge and thereafter may be closed following a dispensing operation to prevent escape of the powder.

A further object of the invention is the provision of a dredge construction which is embodied in a plug insert such a plug insert, being engageable within a ring or end member so that the powder or dust may be filled into the empty cartridge by removal of the plug, thus permitting successive refillings of the powder.

Numerous other objects and advantages of the invention will be apparent as it is better understood from the following description, which, taken in connection with the accompanying drawings, discloses a preferred embodiment thereof.

Referring to the drawings:

Figure 1 of the drawings shows a filled and sealed container embodying the invention with parts broken away and with parts in section;

Fig. 2 of the drawings illustrates the container shown in Fig. 1 with certain container parts in extended position, as during a dispensing operation;

Fig. 3 is a top plan view of the container;

Fig. 4 is a transverse view in section of the container as viewed substantially along the line 4—4 of Fig. 1 and showing the perforated flexible valve;

Fig. 5 is an enlarged fragmentary view in section taken substantially along the line 5—5 in Fig. 3;

Fig. 6 is a view similar to Fig. 5 as viewed substantially along the line 6—6 in Fig. 4;

Fig. 7 is a view similar to Fig. 3 showing an alternative form of end construction; and

Fig. 8 is an enlarged fragmentary section of the upper or discharge end of the modified container as viewed along the line 8—8 in Fig. 7.

As a preferred embodiment of the invention the drawings disclose an inner fibre container body 11 and a two part outer fibre container body 12. The container body 11 has a sheet metal bottom end 13 secured thereto in an end joint 14, as best illustrated in Fig. 6 of the drawings. A top metal end 15 is secured to both the inner container 11 and to the upper part of the outer container 12 in an end seam joint as at 16. An imperforate bottom metal end member 17 is secured to the lower part of the outer container 12 in a bottom and joint as at 18.

A decorative label or wrapper 19 setting forth descriptive or advertising matter regarding the container contents is secured to and holds to-

gether the parts of the outer container body 12. Such a label is marked for severance as at 22 which prior to being severed secures the container parts together and keeps the contents of the container intact. The two parts of the body wall of the outer container body 12 preferably abut at the marked region of the label so that the lower or major portion of the outer container may be withdrawn in telescopic manner relative to the inner container body after severing the label so as to provide a plunger element for the combination or assembly. The remaining portion of the outer container is secured upon the inner container 11 by a plurality of staples or rivets 23 in addition to the end seam 16 at the discharge end of the container (Fig. 2).

The top end member 15 (Figs. 3 and 5) has a dredge 24 centrally disposed within a sunken panel 25 of the end. The dredge 24 is secured rotatably to the end member by lugs 26 struck from the material of the end. Such a dredge may be rotated, by means of extended finger lugs 27, to bring a plurality of openings 28 in the dredge into or out of register with a plurality of similar perforations cut in the end.

A flexible disc 29, preferably formed of paper, serves as a valve for admitting air into the powder cartridge (designated by the numeral 32) which is provided by the inner container body 11 with its bottom and top ends 13 and 15. The flexible disc 29 has a plurality of small openings 33 (Fig. 4) formed in a circle concentric with the center of the disc. Such a flexible disc is located upon the bottom end 13 its periphery being embodied in the end seam joint 14.

The bottom end 13 is cut through with a central opening 34. The end joint preferably is formed with an outside diameter of the same exterior dimension as the exterior dimension of the inner tubular body 11. In other words, the seam 14 is a flush joint so that the outer container body may have sliding movement over the inside container body 11 and over the powder cartridge contained therein.

Such a combination container unit is assembled prior to filling first by having both the inner and outer fibre container bodies 11 and 12 joined with their respective ends 13 and 17. The two sections of the body 12 are a single composite unit at such a time, the label 19 holding the parts together. The inner container body 11 with one end attached next is inserted within the outer container body 12. When thus assembled a desired number of staples 23 may be inserted, being driven in from the outside, to secure the inner body 11 and the composite outer body 12 together as a unit.

The assembled container now is ready to be filled with pulverulent powder or dust material 36. After filling, the metal end 15 with its dredge 24 previously assembled (as shown in Fig. 3) then is applied to the double stapled walls of the inner body 11 and upper body 12 and the end flange is spun or crimped in place to produce the end seam 16. With the dredge 24 in a closed position upon such an assembled container, the contents are sealed in and may be stored for an indefinite period.

When the container is to be placed in service the label 19 is severed along the marked line 22. This separates the two parts of the outer body 12 and detaches the lower major portion for sliding movement on the inner container body 11 containing its cartridge of powder, the top and bottom end members 13, 15 as well as the upper part of the separated double body 12. The dredge 24 next is rotated in position so that the perforations 28 are brought into registration with openings in the end member 15. This prepares the container for dispensing its contents as a dust spray or dust cloud.

The separated major portion of the container body 12, with its end member 17 is used as pump element 37 and when it is withdrawn or slid back over the inner container body 11, the air seeps in between the inner surface of the body 12 and the outer surface of the body 11 passing into a pump chamber 38. Chamber 38 is outlined by the lower body 12 with the end member 13 for its top and end member 17 for its bottom. When the pump element 37 is moved in an opposite direction, i. e. back to its former position, the air within the pump chamber is compressed and is forced through the opening 34 in the end 13 and against the lower surface of the paper disc 29. This flexes the paper disc and as it is lifted at the center, the openings 33 are uncovered and the air escapes through the openings into the cartridge containing the pulverulent material 36. This air stirs up the material as it permeates the mass and expels a charge of such mixture through the perforated openings in the end 15 and through the dredge openings 28 as shown in Fig. 2.

Figs. 7 and 8 of the drawings disclose a modified construction of the top end of the dispensing container. A metal friction ring 39 is substituted for the metal end 15. Such a ring has an opening 42 which is bordered by a depending wall 43. This forms a frictional seat for a friction plug insert 44.

Such a plug insert may be provided with a dredge 45 which is similar to the dredge 24 also having openings as the openings 28 hereinbefore described. The dredge 45 is secured in a sunken panel in the plug insert in a rotatable manner the same as that described in connection with the dredge 24 (Figs. 3 and 5).

When a plug insert 44 is used in connection with a dispensing container of the class described, the metal ring 39 may be secured to the tubular bodies 11 and 12 in the can manufacturers' plants by the usual form of end seam being completed when shipped empty to the powder manufacturer. After the container is filled the plug member 44 is inserted in the usual manner and the filled container then is ready for storage and shipping.

When such a modified plug insert is used, the same dispensing container may be used repeatedly, for when the contents of the container is dispensed additional insecticide or pulverulent material may be refilled into the cartridge chamber.

It is thought that the invention and many of its attendant advantages will be understood from the foregoing description, and it will be apparent that various changes may be made in the form, construction and arrangement of the parts without departing from the spirit and scope of the invention or sacrificing all of its material advantages, the form hereinbefore described being merely a preferred embodiment thereof.

I claim:

1. A dust gun for storing and disseminating pulverulent materials under pressure, comprising an inner tubular container body member for holding the pulverulent product, a two-part separable outer tubular body member enclosing said inner body with one part thereof slidably

mounted in telescoping relation on said inner body and having an imperforate bottom end member secured thereto, a perforated end member permanently seamed to said inner body and to a stationary part of said outer body at the discharge end of the gun to hold said members against relative movement, said inner body having a bottom end member seamed thereto in an end joint and provided with a central opening, and a flexible valve disc disposed within said inner body member adjacent said bottom end thereof normally closing said opening and having its periphery embodied in said end joint, said valve disc having an aperture spaced transversely from the opening in said inner body end member and normally closed by an imperforate part of the latter, the space between the respective bottom ends of said inner and outer body members constituting a pump chamber, whereby outward telescoping movement of the movable part of said outer body member admits air between said inner and outer body members into said chamber, and inward telescoping movement of said outer body member forces the entrained air through said opening to flex inwardly said valve disc and expose the aperture thereof, continued relative inward movement forcing the air through said aperture into the pulverulent materials to expel the same in finely diffused and disseminated form through the perforations in the discharge end of said gun.

2. A dust gun for storing and disseminating pulverulent materials under pressure, comprising an inner tubular container body member for holding the pulverulent product, a two-part separable outer tubular body member enclosing said inner body with one part thereof slidably mounted in telescoping relation on said inner body and having an imperforate bottom end member secured thereto, a perforated end member permanently seamed to said inner body and to a stationary part of said outer body at the discharge end of the gun to hold said members against relative movement, said inner body having a bottom end member seamed thereto in an end joint and provided with a central opening, said joint being flush with the outer surfaces of the inner body member to insure a snug telescoping fit between said inner and outer body members, and a flexible valve disc disposed within said inner body member adjacent said bottom end thereof normally closing said opening and having its periphery embodied in said end joint, said valve disc having a plurality of circumferentially spaced apertures spaced radially from said central opening in said inner body end member and normally closed by an imperforate part of the latter, the space between the respective bottom ends of said inner and outer body members constituting a pump chamber, whereby outward telescoping movement of the movable part of said outer body member admits air between said inner and outer body members into said chamber, and inward telescoping movement of said outer body member forces the entrained air through said opening to flex inwardly said valve disc and expose the apertures thereof, continued relative inward movement forcing the air through said apertures into the pulverulent materials to expel the same in finely diffused and disseminated form through the perforations in the discharge end of said gun.

RICHARD J. WHITE.