My invention relates to powder, or dust, guns or sprayers and refers particularly to the discharge end of such devices.

In devices adapted for the spraying of dusts and powders intended for use as insecticides and for other purposes, it is essential that the device be of such mechanical construction that a reciprocating movement of the plunger element will cause the dust, or powder, within the device to be emitted in the form of a spray.

To accomplish this it is necessary that air be forced under pressure into that portion of the device containing the powder under such conditions that a mixture of powder and air will be expelled under pressure from the device.

This is usually accomplished by a reciprocating movement of the plunger element under conditions which will allow of the entrance of air between the plunger and the powder during one movement and will prevent the admission of air during the opposite movement, thus forcing the air into the powder chamber and thence a mixture of powder and air outwardly from the device.

It is essential that the mixture of air and powder emitted from the gun be in the form of a spray in order that a maximum coverage may be accomplished, and that this mixture be of uniform consistency in order that a uniform distribution of the powder may result.

One of the objects of my invention is a device of the character described, in which the emission of air and powder in the form of a uniform mixture may be assured.

Another object of my invention is a device of the character described, in which there will be no clogging of the exit element.

Another object of my invention is a device of the character described, in which there is a mixing chamber between the powder-containing chamber and the exit opening of the device.

Another object of my invention is a device of the character described which is simple in construction, economical in production, and effective in results produced.

The above mentioned, and other, advantages of my device will be evident upon a consideration of my specification and accompanying drawings, in which similar parts are designated by similar numerals.

Figure 1 is a vertical cross-section of one form of my device incorporated within a specified powder gun.

Figure 2 is a left end view of the device of Figure 1.

Figure 3 is a section through the line 3-3 of Figure 1.

Figure 4 is a face view of the discharge cover of Figure 1.

Figure 5 is a face view of the discharge cover of Figure 1 with the covering strip removed.

Figure 6 is a face view of the distributing member of Figure 1.

Figure 7 is a face view of the air-admitting valve of Figure 1.

Figure 8 is a broken vertical cross-section of a modified form of a discharge cover.

Figure 9 is an end view of Figure 8.

The particular form of my powder container shown in Figures 1, 3, 4, 5 and 6 comprises a tubular member 10, one end of which carries a distributing member having the annular member 11 having a plurality of openings 12, 12 therein, and a peripheral flange 13, the latter being affixed by suitable means to the inner face of the tubular member 18. This distributing member may be of paper, tin or other suitable material.

A discharge member consisting of the annular element 14 having a central opening 15 and a peripheral flange 16, is placed over the end of the tubular member, is spaced from the distributing member 11-13, the flange 16 being fixedly attached to the outer face of the tubular member 18. This discharge member may be of paper, tin or other suitable material.

A strip of paper, or other suitable material, 17, is pasted upon the outer face of the element 14 and covering the opening 15. I prefer that this strip be long enough to extend slightly beyond the flange 13.

While this construction of distributing member and discharge member may be employed with tubular members, the other, or air admitting end, of which, I illustrate and explain one form of air-admitting construction in order that the operation of my device may be understood may vary in construction.

In the air-admission device shown in Figures 1 and 3 the tubular member 18 carries a member consisting of the annular member 18 having a central opening 19 and a peripheral flange 20, the latter being fixedly attached to the inner face of the tubular member 18. Fixedly attached,
by means of glue 18', or otherwise, to the outer face of the member 18 and covering the opening 19, is a covering member 21 formed from air pervious and powder impervious material during the operation of the device, as felt or other suitable material.

A powder container having my distributing and discharge member may be employed with any suitable plunger member, I illustrate and describe one form of such plunger in order that the operation of the device of my invention may be understood.

The plunger shown in Figures 1, 2 and 3 consists of a tubular member 22, the outer end of which carries a cover consisting of the annular member 23, having an opening 24 therein and a peripheral flange 25 which is fixedly attached to the outer face of the tubular member 22. The tubular member 23 is telescopically movable over the tubular member 10, the contact between these two members being such as to prevent the passage of air therethrough during the operation of the device. Positioned between the end of the tubular member 22 and the flange 25, is a flap valve 26 capable of covering and uncovering the opening 24. This valve may be of any proper resilient material as paper or rubber. The movable portion of the valve member is formed by making a cut-out 27 about a portion of the member 26, the un-cut portion 28 acting as a hinge.

The operation of the device is as follows, the several parts being in the position shown in Figure 1:

The strip 17 is removed thus exposing the opening 18. As the plunger is moved inwardly the air in the chamber 28 closes the valve 26, thus forcing the air through the filter 21 into the chamber 29 containing the powder 30. The air and a portion of the powder thus become thoroughly intermixed and are forced through the openings 12, 13 of the distributing member and into the chamber 31, from which they are forced outwardly through the opening 15 of the discharge member.

In the usually employed powder guns the air and powder are forced directly through a single opening into the atmosphere. In devices of this character the emitted air and powder are in the form of a stream instead of that of a spray and hence are ineffective.

To overcome this generally recognized inefficiency, it has been proposed to position an inwardly directed tube surrounding the discharge hole but it has been found that this tube becomes clogged with a solid mass of powder rendering the device ineffective.

It has been further proposed to overcome this difficulty by using a perforated tube but this has also been found to be ineffective.

In the device of my invention, however, the mixture of air and powder formed in the powder container are not ejected directly into the atmosphere but are forced into a mixing chamber between the powder container and the exit opening, thus allowing of a more thorough mixing of the air and the fine powder in a compartment separate from the powder mass.

It is evident, therefore, that in my device the air cannot force a mass of powder into, or through the exit opening, to cause it to escape in the form of a stream or to clog the opening, as the mass of powder is never in contact with the exit opening.

I have found further that my device produces a much more uniform and complete mixture of the air and the powder and described the above passing over and intermixing with the powder in the powder chamber is naturally un-uniform, but the additional intermixing of the two in my mixing chamber before exit produces a more uniform result and hence a much superior spray, as it does not contain mixtures of different degrees of composition.

When the plunger is withdrawn, the valve 26 opens into the position 25' and the powder can not pass through the filter 21 into the chamber 28.

In the modified form of my device shown in Figures 8 and 9 the outer cover of my device is a single sheet of material, as paper, with a central annular portion 32 deeply scored in order that it may be readily punctured to afford an exit opening. It will thus be seen that my invention presents a simple and inexpensive exit member for powder guns producing superior spray results.

I do not limit myself to the particular size, shape, number, arrangement or material of parts as particularly shown and described, these are given simply as a means for clearly describing the device of my invention.

What I claim is:

1. A powder dispensing container having an air pressure means telescopically associated therewith comprising a hollow tubular body portion, a lateral, outwardly flanged partition within said body portion and adjacent one end dividing said body portion into a powder containing chamber and a mixing and dispensing chamber, said partition having perforations therein and a perforate friction fitted cover for the container abutting at its inner side against the ends of the body portion and the partition flange.

2. In a powder dispensing container, a mixing chamber adjacent one end formed in the body of the container by means of a cover for said container telescopically disposed over the end thereof, in frictional engagement therewith and a lateral partition spaced from the end of the container by means of an outwardly extending flange abutting against the inner face of the cover, the partition having a plurality of openings and the cover having a discharge opening.

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