

May 2, 1939.

W. H. ROSE

2,156,268

DISCHARGE TUBE FOR DUST GUNS

Filed March 12, 1936

2 Sheets-Sheet 1

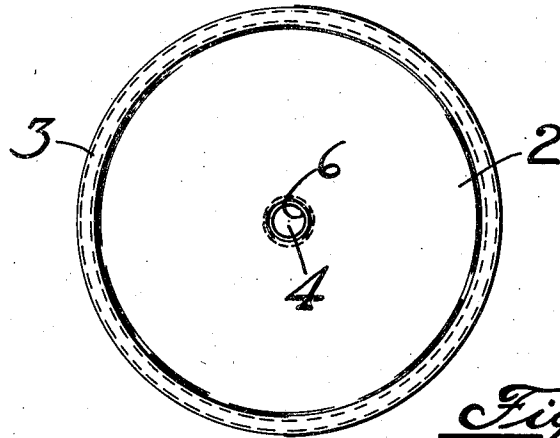


Fig. -2

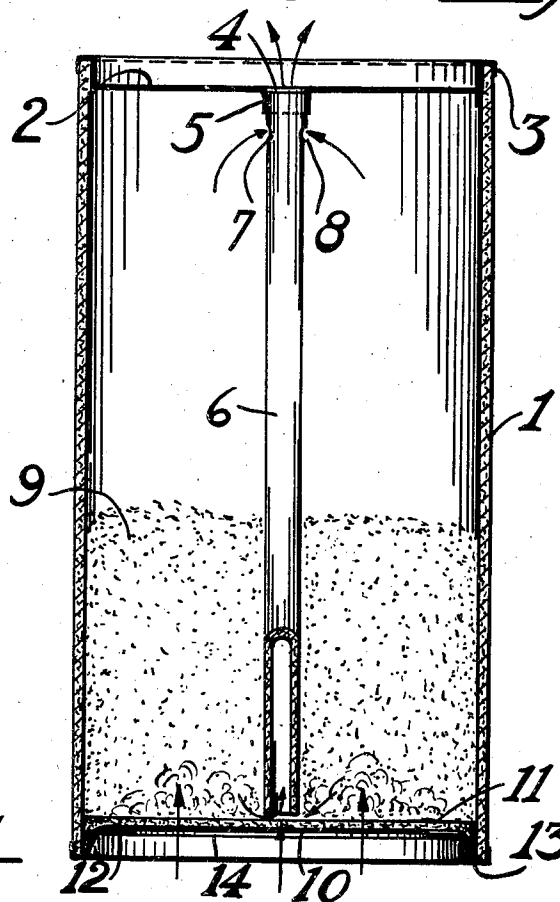


Fig. -1

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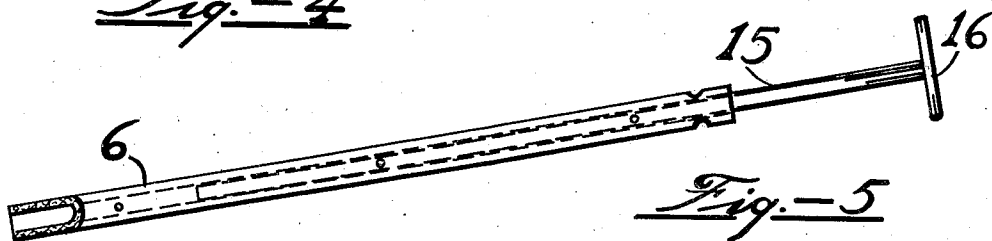
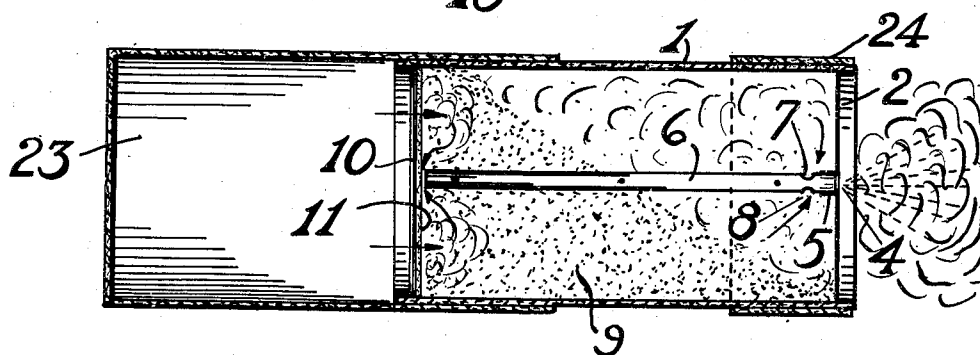
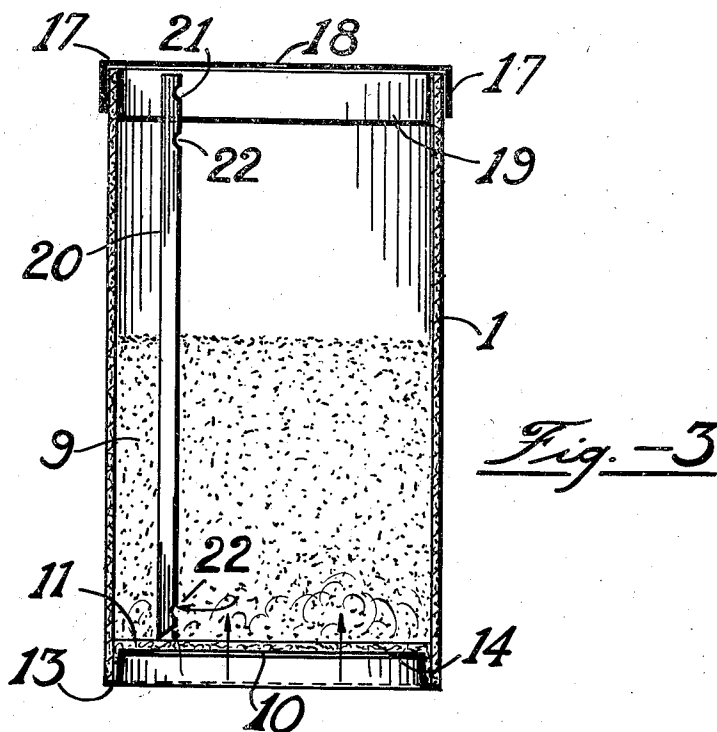
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UNITED STATES PATENT OFFICE

2,156,268

DISCHARGE TUBE FOR DUST GUNS

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Application March 12, 1936, Serial No. 68,410

2 Claims. (Cl. 43—147)

This invention relates to improvements in the manufacture of dust or powder guns, particularly guns of the type used for distributing insecticidal dusts or powders. A principal object of the invention is to provide a powder gun containing a discharge tube of small and convenient form which may be mounted either without any rigid connection or with a simple attaching means. The tube is adapted to give uniform distribution of the powder-air mixture and to prevent the discharge of solid streams of powder, in all positions of the gun.

A further object of the invention is to introduce the powder into an elongated tube of the type described at various points along the tube.

A further object is to utilize a mixing chamber of special form in connection with the discharge tube, in order to secure better distribution of the powder.

These and other objects of the invention will be fully understood from the following description read in connection with the accompanying drawings, in which

Fig. 1 is a vertical section through a form of the invention in which the discharge tube is utilized in connection with a cartridge of the general type shown in my copending U. S. patent application Serial No. 32,341, filed July 20, 1935 now Patent No. 2,116,716 of May 10, 1938.

Fig. 2 is a top plan view of Fig. 1;

Fig. 3 is a vertical section through an alternative form of cartridge in which the discharge tube is mounted, preferably loosely, in the mixing chamber at the end of the cartridge.

Fig. 4 is a transverse horizontal section through the device of Fig. 1 mounted in the telescoping sleeve which serves as a plunger to complete the powder gun; and

Fig. 5 is a perspective view showing a device for facilitating the placing of the discharge tube in the powder containing cartridge.

Referring first to Figs. 1 and 2, reference numeral 1 denotes a cylindrical cartridge made of cardboard, preferably water-proof, or other suitable sheet material. The upper end of the cartridge is closed by a depressed cap 2, best made of tin plate and crimped over the edge of the cartridge, as shown at 3. Cap 2 is punched to form an opening 4 which may be centrally placed and has a depending flange 5.

In this opening is mounted the end of a discharge tube 6. The tube may be secured by a friction fit in the opening 4 and preferably also is fastened therein by an adhesive applied to the inner side of the flange 5. Perforations 7 and

8 on opposite sides of tube 6 near its top permit the entry of powder, from the mass 9, when the device is in use. Other perforations may be provided along the tube. Air and powder enter the tube at the open bottom 10.

The invention is illustrated in connection with a type of cartridge having an air-pervious dust-impervious closure 11 of felt or the like of the general character described in my application Serial No. 32,341 referred to above. The felt is held in position by a ring 12 which is crimped over the bottom edge of the cartridge as shown at 13. Air passes through the large central opening 14 in ring 12. The discharge tube construction is particularly useful in connection with the type of cartridge described but is not limited to that type. The use of the discharge tube is advantageous especially with the larger type of dust guns. As described in my application referred to, small sizes of guns can be satisfactorily made for direct discharge of the powder through a small opening in the end of the cartridge.

I have found that good results can be obtained by using relatively thin, light weight paper or cardboard tubes for discharging the powder. They can be purchased and placed in position more cheaply than the various forms of perforated metal discharge members which have been heretofore suggested. Usually these have required soldering, which substantially increases the cost and makes a clumsy shipping unit when the discharge tube and cap are supplied as a separate unit. It is of course not essential that the discharge tube of the present invention be made of paper, as metal or other materials might be used, but paper or cardboard is preferred.

The cartridge is best assembled by securing the felt closure 11 and ring 12 in position, charging powder into the cartridge, and then affixing the cap 2. Tube 6 is inserted through opening 4 after the cap is in position. The insertion of the tube through the powder mass can be effected without danger of clogging the tube by using the removable plunger 15 shown in Fig. 5. This is run all the way into the tube before the tube is inserted and the two parts together are then placed in position. When this has been done the plunger is withdrawn by the handle 16. If an adhesive is to be used to secure the tube, it will have been placed on the flange 5 before the tube is inserted. In many cases a sufficiently tight connection can be made merely by a friction fit. Tube 6 should terminate far enough above the felt 11 to permit ready access of air into the tube.

Referring to Fig. 3, the form of the invention there shown is similar to that of Figs. 1 and 2. The cartridge is, however, provided with a flat cap 17 having a central small orifice 18 and a mixing chamber in the form of a cup-shaped member 19 is secured in the top of the cartridge. This may be done by gluing the cup-shaped member to the cartridge if the member is made of paper; if it is made of tin, it is preferable to crimp the metal over the edge of the cartridge. A discharge tube 20 is held by a friction fit, with or without an adhesive, in the bottom of the mixing chamber. The end of the tube is cut at an angle so that it may rest on the felt bottom closure without stopping the ingress of air into the tube.

A perforation 21 is formed in the tube above the bottom of the mixing chamber and other perforations 22, one or more in number, are formed in the part of the tube which extends throughout the powder chamber. In this form of the invention the discharge tube is placed off center in the cartridge.

For satisfactory operation of the device the opening 18 should be as large or larger than the openings 21 and 22 which transmit the powder to the mixing chamber.

In Fig. 4 the complete device is illustrated using for illustration the cartridge and tube form shown in Figs. 1 and 2. Reference numeral 23 denotes the telescoping sleeve which serves as a plunger to force air through the felt disk 11. A circular stop member 24 prevents the sleeve being pushed down too far. This construction is shown more in detail in my application referred to above.

The operation of the device will be obvious as it is merely necessary to reciprocate the sleeve to cause the powder and air to be discharged through the tube 6, no matter in what position

the gun may be held. Difficulty has been found with certain types of gun in which merely an opening is provided in the end for the discharge of the powder. When the gun is held pointing straight down or at a sharp angle downwardly, the powder overlies the opening and even when a mixing chamber is provided there is a tendency for a solid stream of powder not diffused in a jet of air, to be expelled from the gun. In the devices of the present invention, this difficulty is avoided by the long tube preferably extending nearly all the way through the cartridge and adapted to receive the powder at several points in its length.

Various changes and alternative arrangements may be made within the scope of the appended claims in which it is my intention to claim all novelty inherent in the invention as broadly as the prior art permits.

I claim:

1. A powder dispensing cartridge, comprising a casing adapted to contain powder, a closure forming one end of said casing and having an opening therein, a mixing chamber arranged adjacent to and below the closure and having a perforation out of line with the opening in the closure, and a discharge tube extending into the mixing chamber and throughout at least the greater part of the length of the cartridge, said tube having an opening below the mixing chamber and adjacent to it and another opening in the mixing chamber.

2. Apparatus according to claim 1 in which the discharge tube has a friction fit in the perforation in the mixing chamber and the bottom end of the tube is beveled so as to support the tube in partly spaced relation to the bottom of the cartridge.

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