May 10, 1938. W. H. ROSE 2,116,715

DUST GUN

Filed Jan. 23, 1935 5 Sheets-Sheet 1

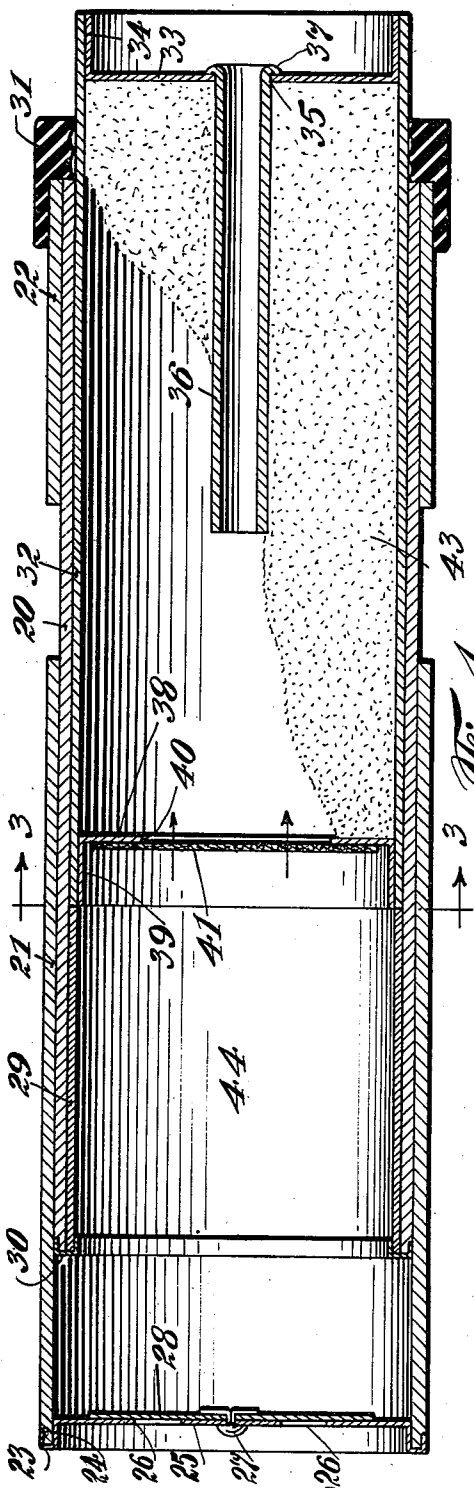


Fig. 1.

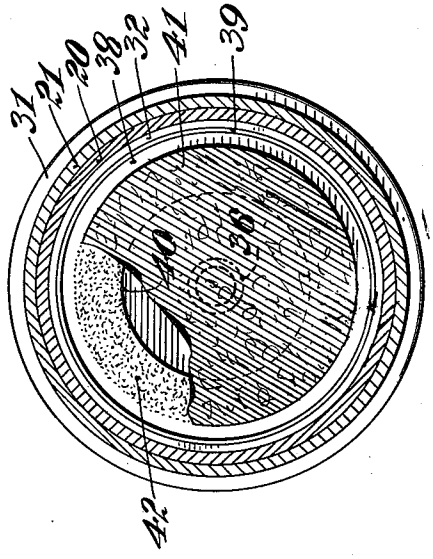


Fig. 3.

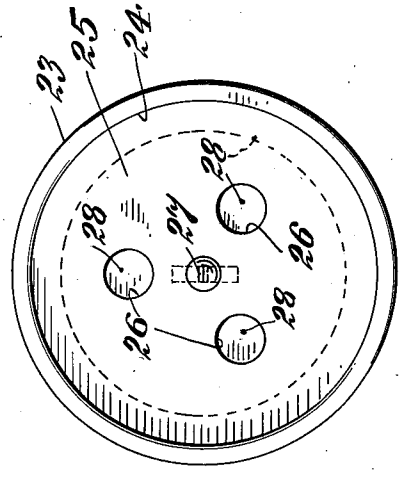


Fig. 2.

INVENTOR.
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Howard Freeman
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May 10, 1938. W. H. ROSE 2,116,715

DUST GUN

Filed Jan. 23, 1935 5 Sheets-Sheet 2

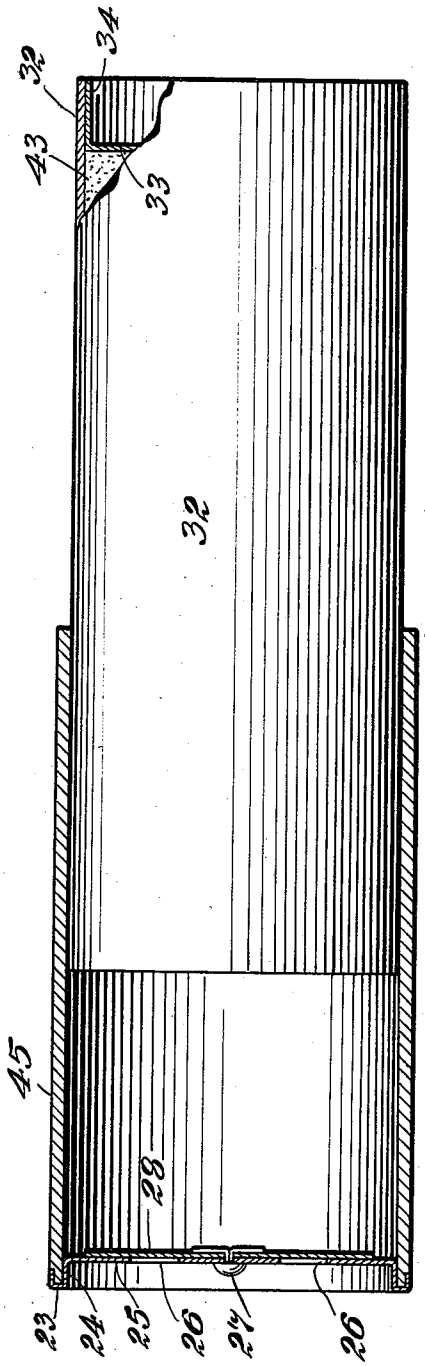


Fig. 4.

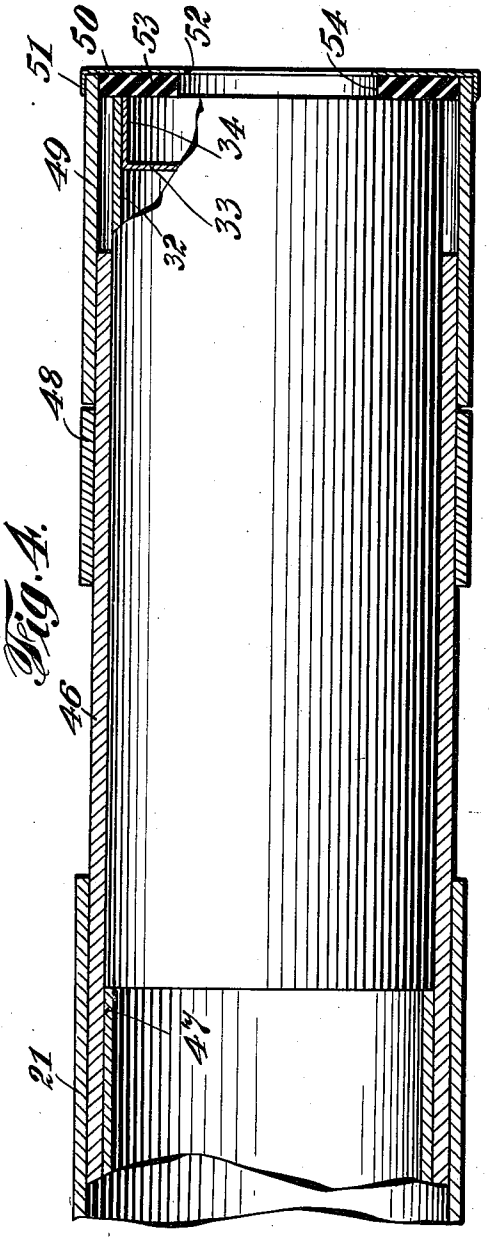


Fig. 5.

INVENTOR.

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May 10, 1938. W. H. ROSE 2,116,715

DUST GUN

Filed Jan. 23, 1935 5 Sheets-Sheet 3

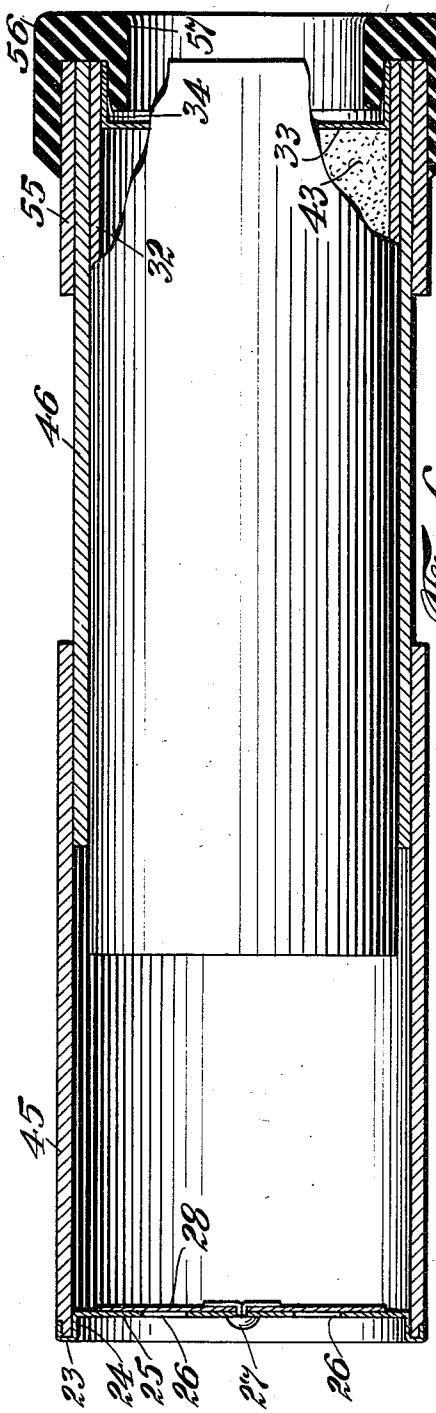


Fig. 6.

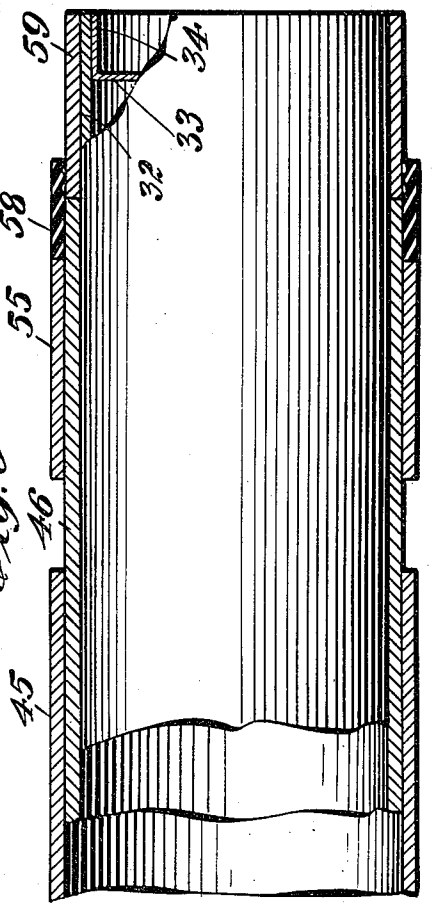


Fig. 8.

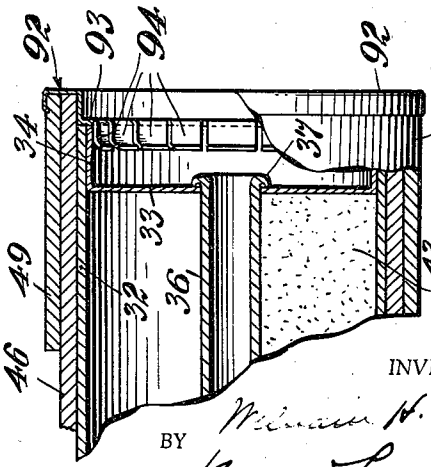


Fig. 7.

INVENTOR.

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His ATTORNEY.

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DUST GUN

Filed Jan. 23, 1935 5 Sheets-Sheet 4

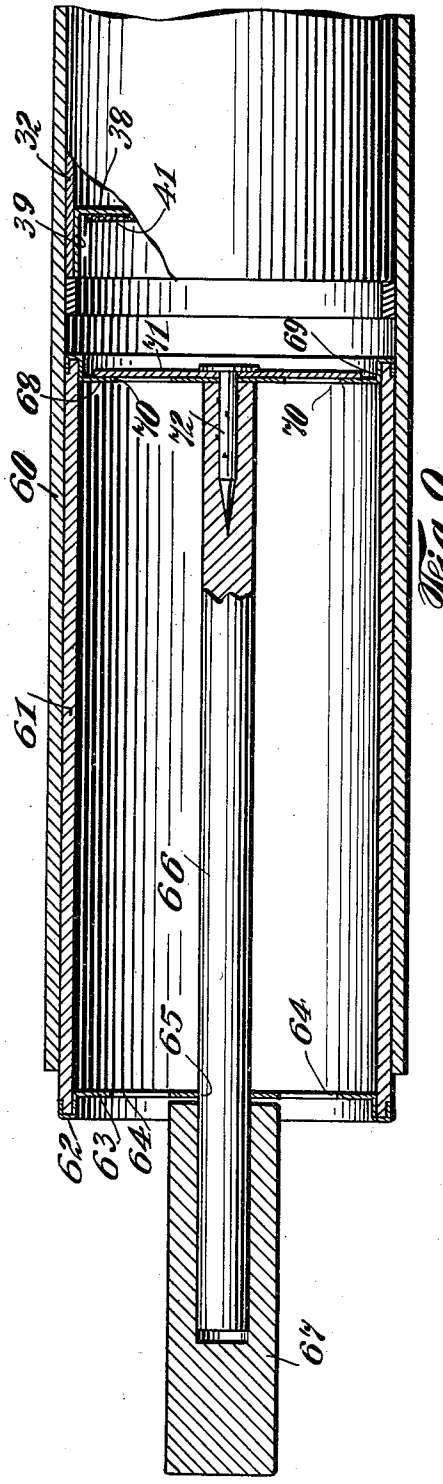


Fig. 9.

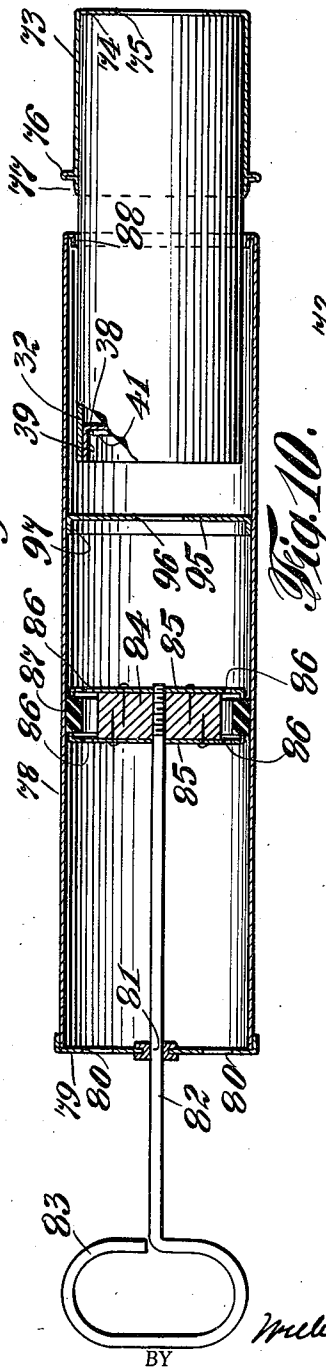


Fig. 10.

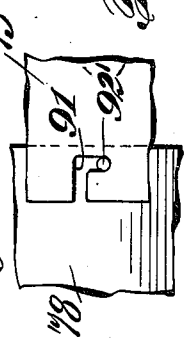


Fig. 12.

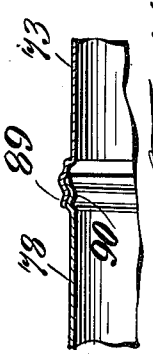


Fig. 11.

INVENTOR.
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DUST GUN

Filed Jan. 23, 1935 5 Sheets-Sheet 5

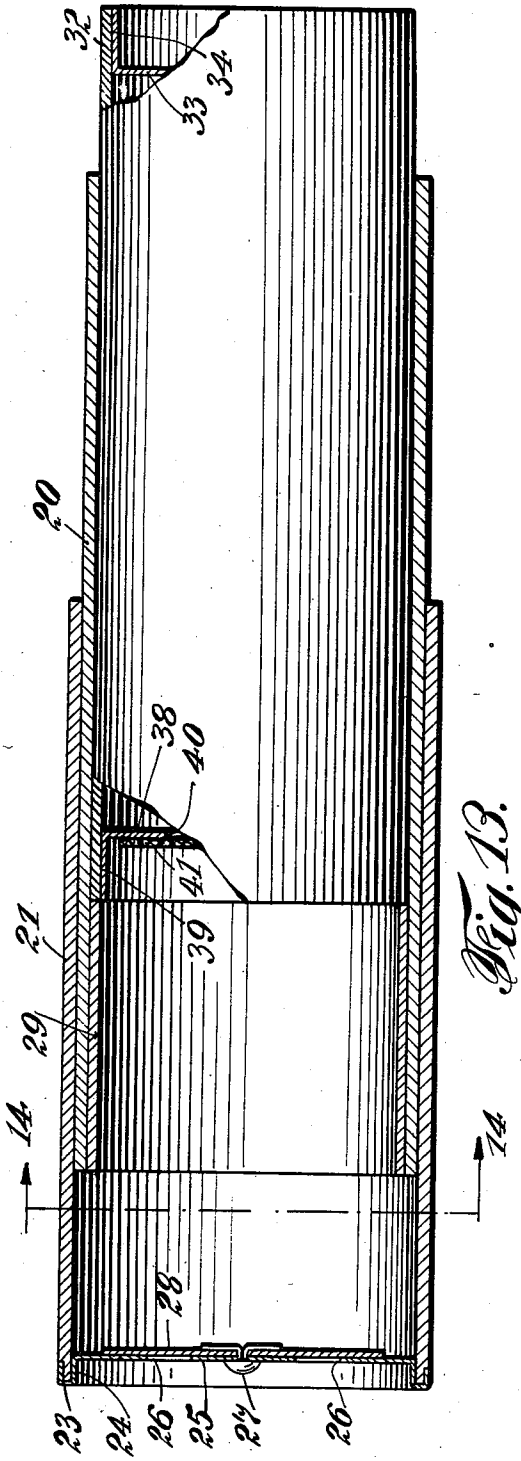


Fig. 13.

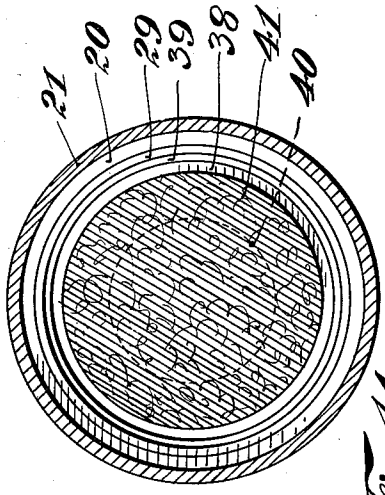


Fig. 14.

INVENTOR.
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Patented May 10, 1938 2,116,715

UNITED STATES PATENT OFFICE

2,116,715

DUST GUN

William H. Rose, Jersey City, N. J., assignor to Stanco Incorporated, a corporation of Delaware

Application January 23, 1935, Serial No. 2,994

4 Claims. (Cl. 43—147)

My invention relates to devices adapted for spraying dusting materials, such as insecticidal dusts, commonly known as "dusting-guns" or "dust-guns" and refers particularly to devices of this character adapted to be used with dust-containing cartridges.

One object of my invention is a dust-gun adapted to be used with a dust-containing cartridge.

Another object of my invention is a dust-gun into which the dust does not have to be poured or introduced in exposed condition.

Another object of my invention is a dust-gun adapted to prevent the loss of the dust prior to, and during, the dusting operation.

Another object of my invention is a dust-gun so constructed that dusting-material cartridges may be readily introduced therein and removed therefrom.

Another object of my invention is a dust-gun within which the dusting-material cartridge may be maintained during the dusting operation.

Another object of my invention is a dust-gun of minimum size when the dusting-material cartridge is contained therein.

Another object of my invention is a dust-gun during the operation of which it is not necessary to pierce or mechanically penetrate the dusting-material cartridge.

Another object of my invention is a dust-gun having a minimum of moving parts.

Another object of my invention is a dust-gun which is economic in construction, easy of operation and effective in its results.

The above mentioned and other desirable objects of my device will be evident upon a consideration of my specification and accompanying drawings.

In the use of the present employed dust-guns it is usually necessary to pour the dusting material into the gun, thus causing loss incident to spilling and the possible objectionable inhalation of the air-carrying dust, both of which are avoided in the use of my gun.

In those dust-guns in which the dusting material is introduced in loose form, it is practically impossible to remove the remainder of the material from the gun when it is desired to use it with a different dust for a different purpose. This is particularly objectionable in the use of horticultural insecticidal powders, as there are numerous powders, each suitable for its own particular application. The gun of my device overcomes this difficulty as the withdrawal of the dusting-material cartridge immediately places it in condition for the insertion and use of a cartridge containing a different dusting material.

It is also to be particularly noted that the partially employed and removed cartridge contains and protects the powder from loss by spillage or otherwise, and that it can be re-inserted for later use.

The operation of the dust-gun of my invention depends upon a co-operation between the piston portion of the gun and the cartridges suitable for use therewith and I have, therefore, considered them as a unitary device in my specification and claims.

A consideration of my specification and the accompanying drawings will clearly disclose the device of my invention as set forth in the claims thereof.

In the accompanying drawings, illustrating modified forms of my device, similar parts are designated by similar numerals.

Figure 1 is a vertical cross-section of one form of the device of my invention.

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 side view of a modified form of the device of my invention, in partial vertical cross-section.

Figure 5 is a broken side view of a modified form of a device of my invention in partial vertical cross-section.

Figure 6 is a side view of a modified form of the device of my invention in partial vertical cross-section.

Figure 7 is a broken side view of a modified form of delivery end of the device of my invention in partial vertical cross-section.

Figure 8 is a broken side view of a modified form of the delivery end of the device of my invention in partial vertical cross-section.

Figure 9 is a broken side view of a modified form of the device of my invention in partial vertical cross-section.

Figure 10 is a side view of a modified form of the device of my invention in partial vertical cross-section.

Figure 11 is a broken vertical cross-section of a modified form for attaching a dusting-material cartridge.

Figure 12 is a broken vertical cross-section of a modified form for attaching a dusting material cartridge.

Figure 13 is a side-view of a modified form of

the device of my invention in partial vertical cross-section.

Figure 14 is a section through the line 14—14 of Figure 13.

My dust-gun consists of two parts, viz, an air-pressure element or plunger, and a dust-containing cartridge.

The air-pressure element shown in Figures 1, 2, and 3 consists of an inner cylindrical member 20 carrying a telescopically movable outer cylindrical member 21 and a second fixedly attached outer cylindrical member 22 ending flush with the end of the member 20. The outer end of the cylindrical member 21 carries a circular metallic closure member consisting of the U-shaped element 23 extending into the elements 24 and 25, the element 25 having a plurality of openings 26—26 therein. This closure member is maintained in position by the frictional contact of the end portion of the cylindrical member 21 into the U-shaped member 23, which is preferably flush with the outer face of the member 21. Fixedly attached to the element 25 by means of the rivet 27 is a flap-valve 28 covering the openings 26—26 made from a material which has sufficient rigidity to close the openings 26—26 when air pressure is brought upon its inner exposed surface and which has sufficient pliability to open said openings when air pressure is brought upon the outer face of the element 25. A cylindrical stop 29 is fixedly attached to the inner face of the cylindrical member 20, and a metallic binding and protective U-shaped ring 30 encompasses the ends of the members 21 and 29. The outer end of the member 22 carries a fixedly attached resilient ring 31, as of rubber or felt, which extends across the ends of the members 20 and 22, the inner face being corrugated and extending slightly beyond the inner face of the member 20.

The particular form of cartridge shown in Figures 1, 2, and 3 consists of a hollow cylindrical member 32, the outer end of which carries an annular closure 33, the outer portion is bent to form a flange 34 which is fixedly attached to the inner face of the member 32. Inserted within the opening 35 of the member 33 is a tubular member 36, the outer end portion 37 of which is bent over and fixedly attached to the member 33. The other end portion of the cylindrical member 32 carries a closure composed of the annular member 38, the end portion of which forms the flange 39 which is fixedly attached to the inner face of the member 32. The member 38 has an opening 40, covered by the member 41 fixedly attached to the member 38 by means of glue 42 or otherwise. The member 41 is composed of a material, as a textile material, and is of such construction that it will allow air to pass therethrough but which will prevent the passage of the dusting material 43 therethrough. The material of which the member 41 is composed may be felt or a similar material and may or may not be provided with self closing openings such as slits cut through the material.

The operation of the device is as follows:—

The cartridge containing the dusting powder 43 is inserted in the open end of the air-pressure member, or plunger, and moved inwardly until it abuts upon the stop 29, the member 31 maintaining it in this position. The member 22 is then grasped by one hand and a telescopic inward and outward movement given the member 21 by means of the other hand. As the member 21 is moved inwardly the air within the chamber 44 is forced through the filter member 41 into the cartridge forcing the material 43 outwardly through the tube 36. During this movement the flap-valve 28 covers the openings 26—26, thus preventing the passage of air therethrough. As the member 21 is moved outwardly, the pressure of air upon the closure member 25 causes the flap valve 28 to open the openings 26—26, allowing air to pass into the chamber 44 for the next inward movement, and the construction of the material 41 prevents the dusting material from being drawn into the chamber 44. The distance between the members 21 and 22 and the distance between the members 30 and 25 is such that when the members 21 and 22 abut upon each other, the member 30 will not abut upon, and thus shock the member 25.

In the modified form of my device shown in Figure 4, the piston member consists of a hollow cylindrical member 45, the outer end carries a closure similar to that described for the device shown in Figures 1, 2, and 3, and the cartridge is similar to that previously described. In the operation of this device the cartridge is held by one hand and the member 45 is given a telescopic inward and outward movement by means of the other hand.

In the modified form of my device shown in Figure 5, the piston member consists of a hollow cylindrical member 46 over which a hollow cylindrical piston 21 similar to that shown in Figure 1 is telescopically movable, the member 46 having the fixedly attached stop member 47. The outer face of the member 46 carries the fixedly attached stop member 48. The member 46 carries also a device to prevent the outward movement of the dusting material cartridge during the operation of the gun, which consists of a cylindrical member 49 of such diameter as to be held frictionally upon the member 46. One end portion of the member 49 carries the fixedly attached disk 50, the peripheral portion being extended into the flange 51, the member 50 having an opening 52 therein. Fixedly attached to the inner face of the disk 50 and spaced from flange 51 is a resilient disk 53 having an opening 54 therein in alignment with the opening 52. The flange 51 and the outer edge of the disk 53 are so positioned with respect to each other that the cylinder 49 is maintained firmly therein. In operation the members 50 to 54 are removed from the cylinder 46, the dusting-material cartridge inserted and the members 50 to 54 positioned as shown, the flange 34 of the cartridge abutting upon the resilient member 53.

In the modified form of my device shown in Figure 6, the cylindrical member 46 carries the exterior fixedly attached stop member 55. The end portions of the members 46 and 55 are encompassed by the resilient disk member 56 fixedly attached thereto and having an opening 57. In the operation the member 46 is removed from within the piston member 45, the cartridge is introduced into the member 46 through its inner end, the extremity of the member 32 and the flange 34 being forced between the member 46 and the resilient member 56 thus forming a closure and maintaining the cartridge in position. The device thus formed is then inserted within the piston member 45.

In the modified form of the discharge end of my device shown in Figure 7 there is an annular ring-shaped member consisting of the U-shaped member 92 extended into the ring 93, from which there are a plurality of inwardly extended prongs 94—94. In employing this cartridge-maintain-

ing device, the annular members 49 and 46 are inserted within the U-shaped member 92, the resilient prongs 94—94 abutting upon the inner face of the cartridge member 34.

In the modified form of the device of my invention shown in Figure 8, a resilient annular stop member 58 is fixedly attached to the exterior face of the cylindrical member 46, the stop member 58 extending beyond the end of the member 46 and being corrugated upon its inner face. In this modified form of my dusting-material cartridge an annular stop member 59 is fixedly attached to the outer face of its cylindrical member 32. In operation this cartridge is inserted within the cylindrical member 46 until the stop 59 abuts upon the member 46, the resilient member 58 thus maintaining the cartridge in position during the dusting operation.

The modified form of my device shown in Figure 9, consists of the hollow cylindrical member 60, within which the piston is telescopically movable. The piston consists of the hollow cylindrical member 61, the outer end of which carries a closure member consisting of the U-shaped member 62 extended into the disk member 63 having a plurality of openings 64—64. Through a central opening 65 in the disk 63 there extends a piston rod 66 carrying the handle 67. The inner extremity of the cylindrical member 61 carries a valve consisting of the metallic disk 68 extended into the U-shaped member 69. The disk 68 has a plurality of openings 70—70 and a flap-valve 71 is attached to the outer face of the disk 68 by means of the flat-headed nail 72. In operation the inward telescopic movement of the piston will force air into the cartridge and hence the dusting-material outwardly from the cartridge.

The modified form of my device shown in Figure 10 is particularly adapted for metallic construction. The cartridge has an annular metallic member surrounding its exposed end portion consisting of the member 73 frictionally attached to the cylindrical member 32 and extending into the end portion 74 having an opening 75 therein. The inner end portion of the member 73 is bent to form a stop member 76 and an extended member 77. The piston member consists of the hollow cylindrical metallic member 78, the outer end of which carries the disk 79 having a plurality of openings 80—80 therein. Through a central opening 81 of the disk 79 there extends a piston-rod 82 having a handle 83. The inner end of the piston-rod 82 carries a piston consisting of the annular wooden disk 84 to the opposite sides of which are attached annular metallic members 85—85 extending beyond the periphery of the member 84 and having a plurality of openings 86—86 therein. An annular resilient member 87 is carried between the circular members 85—85 and extends beyond their peripheral edges. The inner edge of the cylinder 78 is bent into a U-shaped formation. In operation the cartridge is moved inwardly into the cylinder 78 until the member 77 of the member 73 is positioned between the member 88 and the cartridge member 32 thus maintaining the cartridge in position during the dusting operation.

Positioned within the piston member and fixedly attached to the inner face of the member 78 is a stop member consisting of the disk 95 having an opening 96 therein and having the peripheral flange 97. In this device the cartridge is inserted within the member 78 until it abuts upon the stop 95 and the metallic member placed thereon and moved inwardly until locked in position by the members 77 and 88.

In the modified form of my device shown in Figure 11, the element 73 as shown in Figure 10 has its inner end portion 89 threaded to engage the threaded portion 90 of the element 78.

In the modified form of my device shown in Figure 12, the element 73 as shown in Figure 10 has a bayonet slot 91 adapted to receive the pin 92'' of the element 78.

The modified form of my device shown in Figures 13 and 14 differs from that shown in Figures 1, 2, and 3 in the elimination of the stop 22 and the resilient member 31. In operating this form of my device the piston is held in one hand and moved telescopically over the member 20, the cartridge being maintained in position by holding both the elements 20 and 32 together by the other hand.

It will thus be seen that the device of my invention is economic in construction, easy of operation, effective in results, that it possesses a minimum of moving parts, that it is not liable to become inoperative, that it prevents the loss of powder and that different powders can be readily substituted for each other.

The foregoing clearly discloses the dust-gun of my invention and I do not limit myself to the particular size, shape, number, material or arrangement of parts particularly described as these are given simply to explain the device of my invention.

What I claim is:—

1. A dust gun, comprising in combination a tubular casing, a valved compression member telescopically associated therewith and forming a closure for one end of the casing, a closure for the other end of said casing consisting of a dispensing cartridge for dust and means for maintaining operative association of the assembly.

2. A dust gun, comprising in combination a pressure element having a valved compression member telescopically associated therewith and a cartridge for said pressure element carrying an air pervious, dust impervious closure at its inner end and means for maintaining said pressure element and cartridge in operative association one with the other.

3. A dust gun comprising in combination a tubular casing, a valved compression member telescopically associated therewith and forming a closure for one end of said casing, a dispensing cartridge for dust forming a closure for the other end of said casing, said compression member and cartridge cooperating to form a compression chamber within the casing and means for maintaining the cooperative association of the assembly during operation.

4. A dust gun comprising in combination a cylindrical body portion open at each end, a valved compression member telescopically associated with said body portion and forming a closure for one end thereof, a dispensing cartridge telescopically associated with said body portion and forming a closure for the other end thereof, stop members for said compression member and dispensing cartridge and means for maintaining said cartridge in operative association with the body portion.

WILLIAM H. ROSE.