April 3, 1928. 1,664,802

A. W. WALKER

DISPENSING MECHANISM FOR SPRAYING MACHINES

Original Filed June 12, 1922 2 Sheets-Sheet 1

Fig. 1.

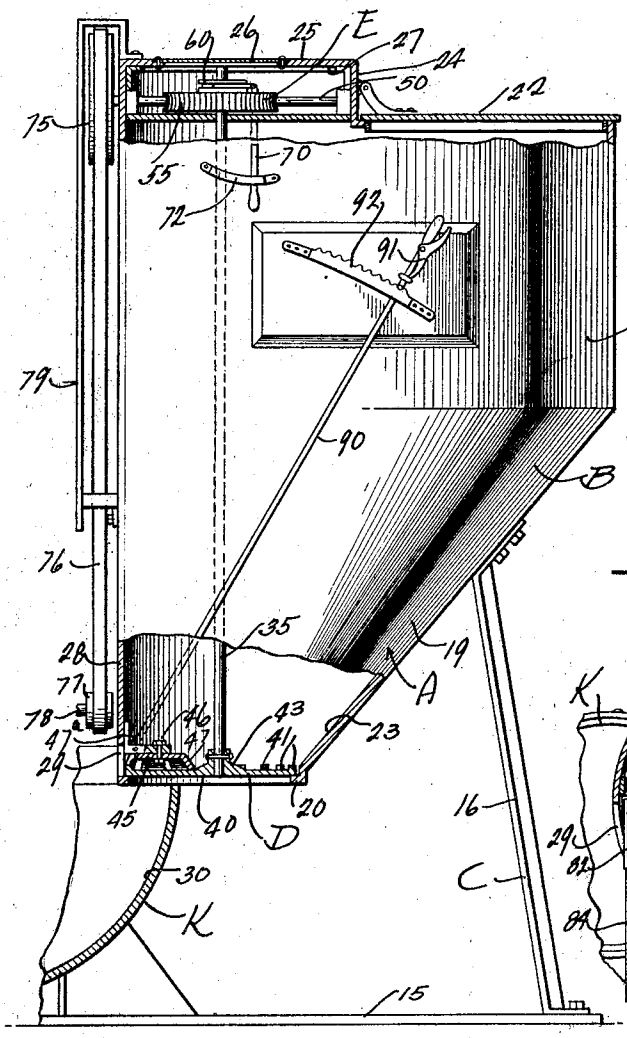


Fig. 10.

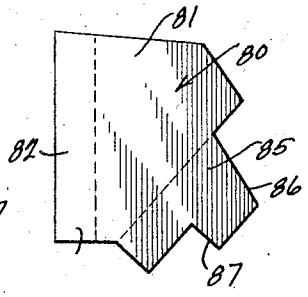


Fig. 7.

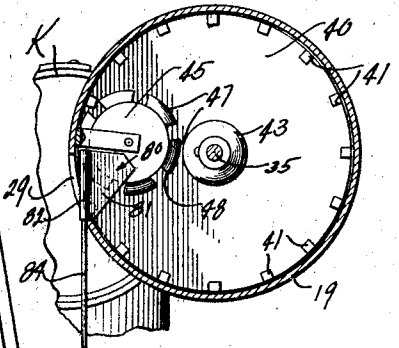


Fig. 9.

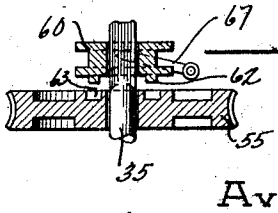
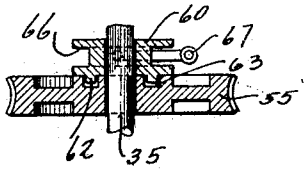


Fig. 8.



Inventor
Avery W. Walker

By Lancaster and Allwine
Attorneys

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A. W. WALKER

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Fig. 2.

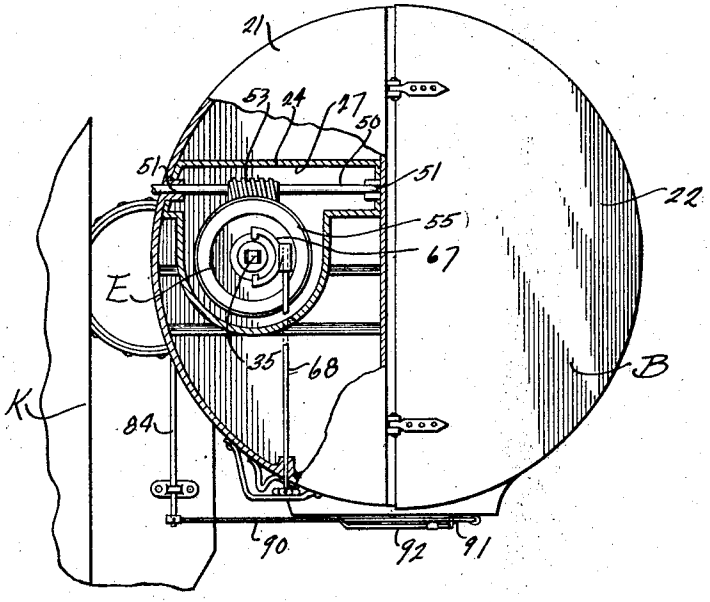


Fig. 3.

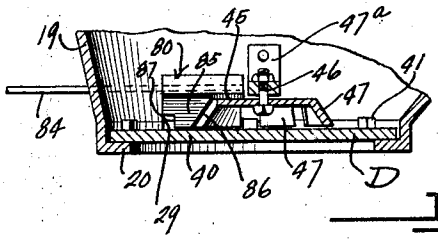


Fig. 4.

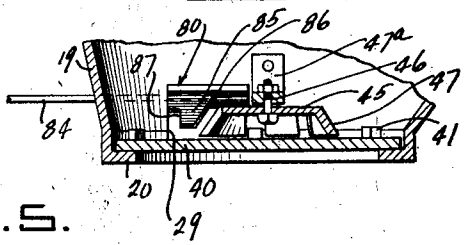


Fig. 5.

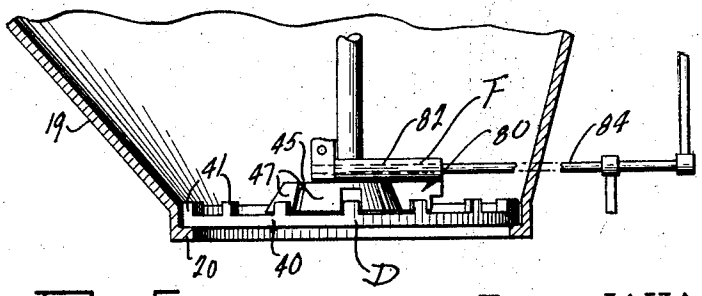
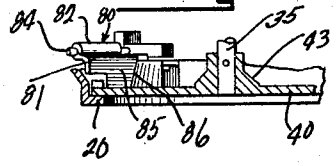


Fig. 6.



Inventor
Avery W. Walker
By Lancaster & Allwine
Attorneys

Patented Apr. 3, 1928. 1,664,802

UNITED STATES PATENT OFFICE.

AVERY W. WALKER, OF GASPORT, NEW YORK.

DISPENSING MECHANISM FOR SPRAYING MACHINES.

Original application filed June 12, 1922, Serial No. 567,808. Divided and this application filed February 4, 1926. Serial No. 86,024.

This invention relates to improvements in means for dispensing materials, such as powder and the like, in connection with mechanism, such as spraying machines.

The primary object of this invention is the provision of an improved type of powder dispensing mechanism, preferably for use in that type of air blast sprayer or duster set forth in U. S. Patent No. 1,576,076, March 9, 1926.

Other objects and advantages will be apparent during the course of the following detailed description.

In the acompanying drawings forming a part of this specification, and wherein similar reference characters designate corresponding parts throughout the several views,

Figure 1 is a fragmentary side elevation of the improved dispensing mechanism of the spraying machine.

Figure 2 is a fragmentary plan view of the improved details of this invention.

Figures 3 and 4 are fragmentary cross sectional views showing certain regulating mechanisms for the dispensing machine, in closed and open positions respectively.

Figure 5 is an enlarged cross sectional view of the details illustrated in Figures 3 and 4, in a different operating position.

Figure 6 is a fragmentary cross sectional view of the powder dispensing and regulating mechanism.

Figure 7 is a cross sectional view taken through the lower hopper end of the dispensing mechanism, showing cooperating flow regulating details of the invention.

Figures 8 and 9 are respective views showing the connected and disconnected clutch details for the drive of the dispensing mechanism.

Figure 10 is a developed view of a gate used in connection with this invention.

From the drawings, wherein for the purpose of illustration is shown only the preferred embodiment of this invention, the letter A may generally designate the improved mechanism, which may comprise a hopper casing B supported upon a frame C and including a constant supply providing mechanism D operated by drive mechanism E. Flow regulating means F is provided for controlling the flow of the materials from the hopper casing into the discharge air blast mechanism K, such as set forth in my patent above referred to, and which will not be described in detail in this application.

The frame C may include a base plate 15, having the outstanding legs 16 supporting the hopper casing B. The frame may be supported upon a wheeled carrier if desired, and may be operated by a prime mover, but as these are conventional details the same have not been shown in the drawings.

The hopper casing B can be made of any desired size and shape, and the same is preferably of metal such as will not corrode or rust incident to the action of the germicide powder or fluid which the same is adapted to contain. This casing includes a cylindrical shaped upper body portion 17, having the lower end gradually tapered as at 19. The lower end of the casing may be left open, although it is preferably provided with an annular supporting flange 20, adapted to receive details of the constant supply regulating means E.

The hopper casing B at its upper end is preferably provided with a rigid wall portion 21, and a hinged cover plate 22, which permits the easy introduction of the germicide powder or fluid into the compartment 23 of the hopper casing. Upon the rigid wall 21, an upstanding and closed gear casing 24 is provided, for the drive mechanism E, and if desired, in the top wall 25 of this casing 24, an opening may be provided in which a closure 26 is detachably placed, to facilitate the placing of lubricant to the enclosed compartment 27 wherein the gears are adapted to operate in an oil bath.

The hopper casing B at its lower end, in a vertical side wall portion 28 thereof is preferably provided with an opening 29, thru which the powder or material from the compartment 23 is dispensed by the mechanism D, to a conduit or passageway 30 of the blower K, in the same or analogous manner as set forth in my patent above referred to.

Referring to the feed mechanism D, the same includes a vertically disposed shaft 35, which is arranged within the compartment 23 of the casing B, at its lower end having a relatively large disk member or gear 40, which at its marginal edges rests upon the flange 20, and closes the lower end of the

hopper; the hopper casing B at its bottom being formed to snugly permit the rotation of the disk, without displacement. The powder or other material from the compartment 23 falls downwardly over the sloping walls 19, and is deposited upon the top surface of the disk 40. This disk 40 has its marginal portion provided with upwardly extending spaced crown teeth 41, lug shaped in cross section, extending at right angles from the plane of the disk, and being substantially square or rectangular shaped in outline. The disk 40 at its center is provided with a frusto-conical shaped outstanding hub 43, in which the lower end of the shaft 35 is keyed; the said hub 43 being tapered so that the powder will not lodge about the shaft 35, but is guided towards the toothed edges of the disk.

Eccentrically disposed over the top of the disk or member 40 is a smaller disk 45, which is rotatably supported by a spindle shaft or bolt 46 carried by a right angled bracket 47ª secured to the wall 28 of the hopper adjacent the opening 29. The opening 29, as is illustrated in Figure 7 of the drawings, may be said to be tangentially arranged to the adjacent smaller disk or gear member 45, and this disk 45 is provided with a plurality of depending outwardly flared blades or teeth 47, in spaced relation, sufficient to provide spaces 48 therebetween adapted to receive the crown piece 41 of the larger disk or gear 40.

The drive means E preferably includes a counter shaft 50, supported as by bearings 51 on a horizontal axis, in the housing 24; the said shaft 50 having a worm 53 thereon located in the compartment 27, which meshes with a worm gear 55 which is freely rotatable upon the upper end of the shaft 35, which extends in bearing relation into the housing 44, as is illustrated in Figure 1.

Located in the housing compartment 27, just upwardly of a worm gear 55, is a clutch member 60, feathered for longitudinal movement upon the shaft 35, and having teeth 62 for reception in recesses 63 provided in the gear 55, whereby to key the said gear 55 with the shaft 35, when it is desired to drive the latter. The clutch member 60 is provided with an annular groove 66, within which the fingers of a yoke 67 cooperates; the yoke 67 being mounted upon a hand operated shaft 68 which rotatably bears in the casing 24, and extends laterally thereof and is provided with a handle 70 which may be held in position in any approved manner, as by a sector 72.

The shaft 50 extends laterally through the casing B, and is provided with a pulley wheel wheel 75 thereon, and upon which is trained a belt 76 which extends for cooperation over a pulley wheel 77 on a drive shaft 78; the belt 76 being guarded by a protecting cover or plate 79, to protect workmen engaged about the machine.

The means F for controlling the exit of the dusting powder through the opening 29 of the hopper casing B comprises a novelly formed gate 80, preferably made from sheet metal and formed to cooperate with the shape of the opening 29, and with the formation of the adjacent gear disks 40 and 45, and with the teeth and blades thereof. To this end the gate 80 is preferably provided with a body portion 81, of substantially triangular configuration, which at one marginal edge thereof is provided with a portion 82 adapted to be rolled about a control shaft 84 horizontally bearing through the casing B, as is illustrated in the drawings. At the outer edge of the body 81, a stopping flange 85 is provided, in a plane preferably at right angles to the normally disposed body portion 81, and this flange 85 is provided with an inclined edge 86 which conforms to the inclination or pitch of the blades 47 at their outer surfaces, and is adapted to face adjacent thereto, and cooperate therewith in stopping the flow of powder through the opening 29. The lower edge of the flange 85 is furthermore provided with a notch 87, which permits the passage of the crown teeth 41 thereby; the said flange 85 thus being positioned slightly radially to the disk 40, when the gate is closed, to stop the flow of the powder or materials through the casing opening 29, as will be apparent from an inspection of the drawings. The shaft 84 extends exteriorly from the hopper casing B, and is provided with an operating lever 90, which at its upper end is provided with a pawl 91 operating over a rack 92 secured exteriorly to the casing B.

In the operation of the improved machine, the desired amount of powder is placed within the hopper casing B, after which the vehicle or other mechanism upon which the machine is mounted is moved between the rows of trees in the orchard, and the blower K set in operation, in accordance with the instructions set forth in my patent above referred to. This creates a suction which acts through the opening 29 tending to withdraw the powder from the hopper B. The shaft 35 is driven positively by action of the gears 53 and 55 when the clutch 60 is thrown in, as is illustrated in Figure 8, and the clock-wise rotation of the gear or disk 40 feeds the powder towards the opening 29 in the direction of the rotatable disk 45, in as much as the disk 45 is disposed above the plane of the gear or disk 40 and in the path of travel of the powder at the periphery of the disk 40, the powder will engage the disk blades 47, and in as much as the disk 45 is positively rotated incident to its toothed meshing relation with the disk

40, the powder will be directed towards the opening 29, and the slope of the teeth 47 aid in directing the powder. The quantity of powder may be regulated for passage through the opening 29, by positioning the gate 80, in accordance with the above description.

Various changes in the shape, size, and arrangements of parts may be made to the form of invention herein shown and described, without departing from the spirit of the same or the scope of the claims.

I claim:

1. In a dispensing mechanism for spraying machines the combination of a hopper casing including an upper cylindrical portion and a lower portion provided with a sloping wall at one side thereof, the casing at the bottom at the lower end of the sloping wall having a horizontally disposed opening therethrough, a gear rotatable in said opening having upwardly facing teeth, said hopper casing in the side wall thereof adjacent said gear having an exit opening therethrough, a toothed disc member, bracket means carried by the side wall of said hopper casing rotatably supporting said tooth disc member therebelow and eccentrically over the gear at said opening, the disc member having teeth in meshing relation with the teeth of the gear and being so positioned that during rotation it will feed material in the hopper casing thru the side wall opening.

2. In a dispensing mechanism a container having a substantially horizontal opening in the lower end thereof and a side opening in a wall of the container adjacent said horizontal opening, a rotary member over the horizontal opening having teeth thereon, a rotary feed disc having teeth intermeshing with the teeth of the rotary member for the purpose of directing materials from the container thru the side wall opening, and a closure including a door portion and an oscillating shaft bearing in the container, said door portion including a flat top flange extending from said shaft and of substantially triangular formation adapted to overlie a portion of said rotary disc, said door furthermore including a flange at the free edge of the first mentioned flange portion extending transversely thereto downwardly into the space between the rotary disc and the wall of said container in which the side opening is provided, said last mentioned flange having one end thereof shaped to conform to the teeth of the rotary disc, the other end thereof being notched to permit the passing of the teeth of the rotary member there past, and said last mentioned flange being divergent towards the rotary disc with respect to the plane of the side wall opening.

AVERY W. WALKER.