A. B. CHAMPLIN.

AIR BLAST SPRAYER.

APPLICATION FILED MAY 25, 1920.

1,396,319. Patented Nov. 8, 1921.

Fig. 1.

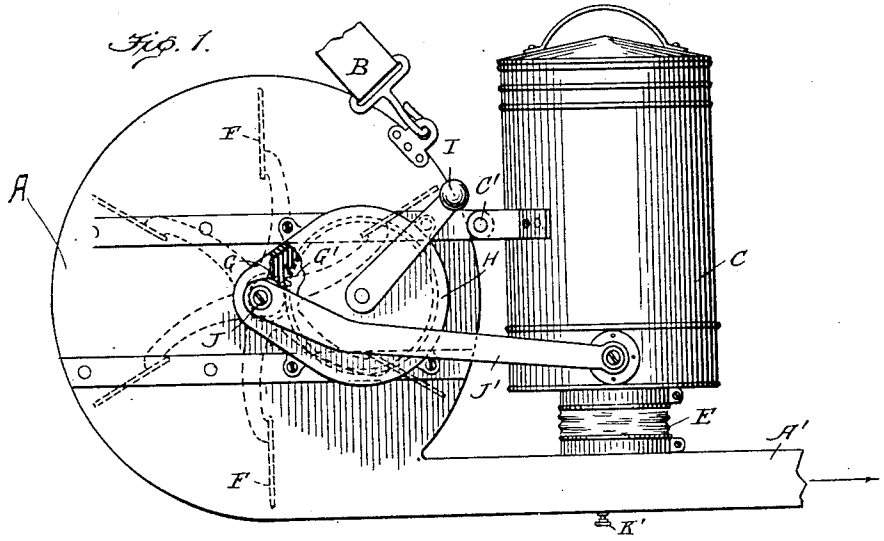


Fig. 2.

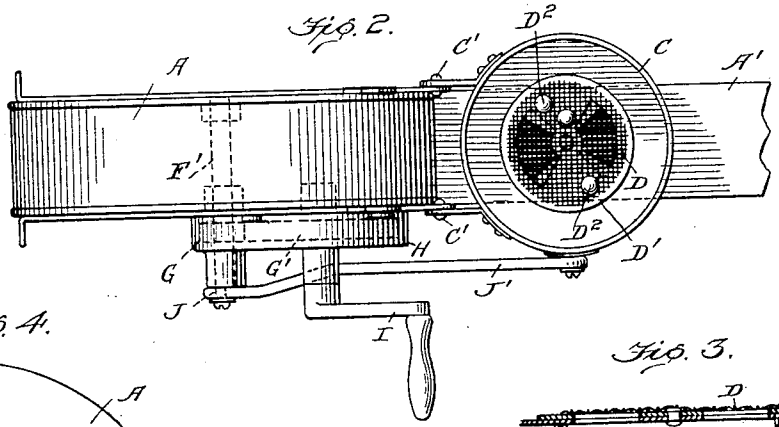


Fig. 4.

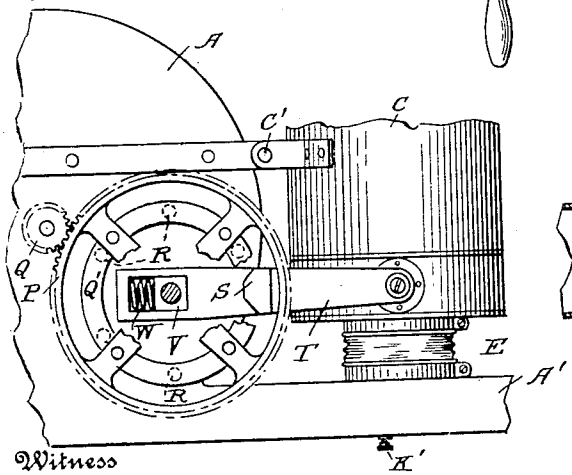
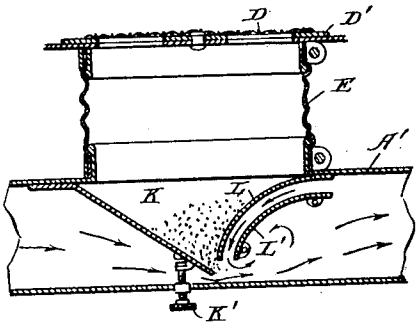


Fig. 3.



Witness

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AIR-BLAST SPRAYER.

1,396,319. Specification of Letters Patent. Patented Nov. 8, 1921.

Application filed May 25, 1920. Serial No. 384,019.

To all whom it may concern:

Be it known that I, ALVIN B. CHAMPLIN, a citizen of the United States, and resident of the village of Tuckahoe, town of Eastchester, in the county of Westchester and State of New York, have invented certain new and useful Improvements in Air-Blast Sprayers, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to spraying devices such as are suitable for applying insecticides to growing plants and its object is to provide simple and effective apparatus which avoids objectionable features often found in analogous machines.

For illustration the invention is shown as embodied in a hand-operated machine in which the insecticide material is constantly shaken into a discharge conduit through which the machine drives a strong air blast.

In the accompanying drawings,

Figure 1 is a side elevation of the apparatus.

Fig. 2 is a plan view of the same apparatus.

Fig. 3 is a detail vertical section of a part of the apparatus.

Fig. 4 illustrates a modified construction.

In these views, A represents a fan casing from which projects a discharge conduit A′ for air to be delivered through the nozzle of an extension, not shown. The casing may be supported by a strap B passing over the neck or shoulders of the user in the usual way. A reservoir C is pivotally connected to the casing at C′ and discharges through a screen D, an adjustable valve D′ in its bottom and a heavy flexible tube E opening into the conduit A′. Within the casing is a common fan F mounted on a shaft F′ bearing an external pinion G meshing with a gear G′ mounted on the outside of the casing A, inclosed, with the pinion, in a small protecting casing H and rotated by a hand crank I.

The shaft F bears at its outer end an eccentric crank pin J connected by a pitman J′ to the lower part of the reservoir C so that the latter may be rapidly oscillated on the pivot C′ when the machine is being operated. Obviously the powder or other material in the reservoir is thus shaken through the valve D′ and neck E into the conduit A′ and discharged with the rapidly moving air therein. To prevent the powder from unduly cohering, balls D^2 are placed in the reservoir. When air is not discharged very freely at the end of the conduit it may pass upward into the reservoir, and to avoid this an inclined spring plate K is secured in the conduit and has its lower margin adjustable in distance from the bottom thereof by a screw K′ which swings the lower part of the plate, and above said margin are fixed rearwardly and downwardly curved plates L, L′ which turn forward air which may have been reversed in direction by backward pressure in the space forward of the tube E. By this means the effect of back pressure is practically eliminated, and incidentally the discharge passage for powder or air may be varied in size.

Instead of using the crank pin J to vibrate the reservoir, the devices of Fig. 4 may be employed. Here the pinion Q of the fan shaft F′, Fig. 2, is driven by a gear P mounted like the gear G′, Fig. 1, on the casing and upon which is fixed a ring Q′ bearing studs R to impinge upon the inclined surface of a lug S, in the plane of the studs R, and upon a pitman T sliding at one end on a block V supported from the casing A and at the other end pivoted as before to the reservoir. Each stud R slides the pitman and swings the reservoir from the fan casing, and a spring W quickly swings the reservoir back as each stud is passed.

In operation, the apparatus is usually supported by the strap B and the crank I is turned, in the proper direction, by the operator, the gearing imparting a rapid rotary movement to the fan and, by means of the crank pin J carried by the fan shaft or its pinion, a quick oscillating movement to the pitman J′ which compels the reservoir C to swing slightly and very rapidly back and forth upon its pivotal axis C′. This shakes the insecticide down through the screen and adjusted valve so that it falls upon the swinging lower part of the plate K and slides into the narrow throat through which the fan drives the air rapidly toward the discharge end of the conduit. Obviously adjusting this plate adjusts the air opening and the insecticide opening at the same time but inversely, since the higher the air velocity, the more powder it will satisfactorily distribute.

What I claim is:

1. The combination with a rotary fan, its

casing, and a conduit leading from the latter, a downwardly discharging reservoir pivoted to the casing above the conduit to rock slightly back and forth, a flexible tube connecting the reservoir to the conduit and permitting such slight rocking, and means for simultaneously rotating the fan and rocking the reservoir on its pivotal axis.

2. The combination with an air conduit and means for creating an air current therein, of a reservoir discharging downwardly into the conduit, a plate for deflecting the air approaching the discharge point of the reservoir, an oppositely inclined analogous member extending downward in the conduit toward the lower margin of the swinging plate, and means for adjusting the angle of the plate to vary the width of the air and insecticide channels.

3. The combination with a fan, its casing and a conduit leading from the casing, of an insecticide reservoir pivoted to the casing at some distance above the conduit, a flexible tube leading from the reservoir into the conduit and allowing the lower end of the former to swing slightly back and forth on the reservoir pivot, and a screen covered adjustable valve controlling the discharge from the reservoir.

4. In apparatus of the class described, the combination with an air conduit, of means for creating an air current therein, means for discharging into the conduit at a predetermined point material to be sprayed, and means for deflecting and reversing the direction of air moving backwardly toward said point.

5. In apparatus of the class described, the combination with an insecticide-powder reservoir having a foraminous bottom and pivoted to rock laterally back and forth from upright position, of balls resting loosely on said bottom, whereby the powder mass is constantly broken up during the rocking.

In testimony whereof I hereunto affix my signature.

ALVIN B. CHAMPLIN.