Dec. 20, 1932. J. FITCH 1,891,325

SPRAYER DEVICE

Filed Sept. 6, 1930

Fig. 1.

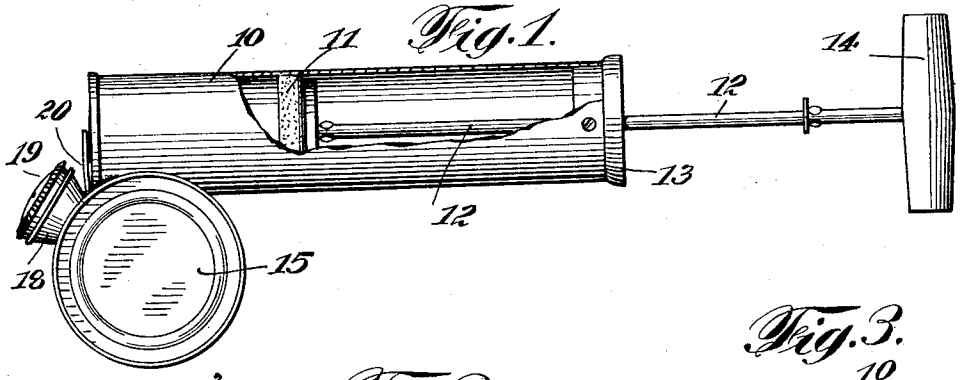


Fig. 2.

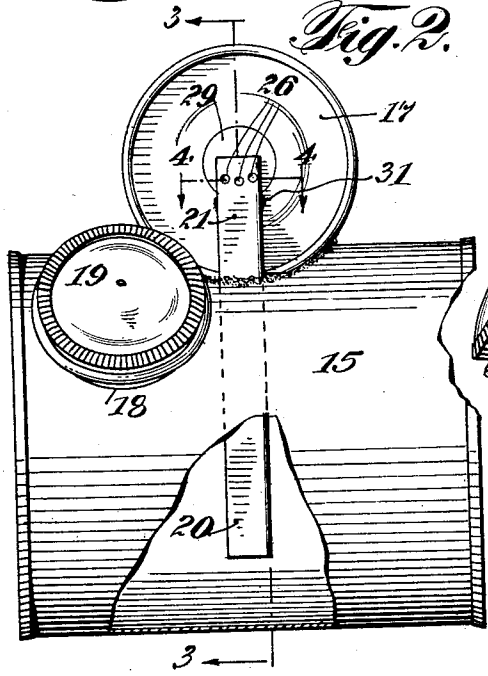


Fig. 3.

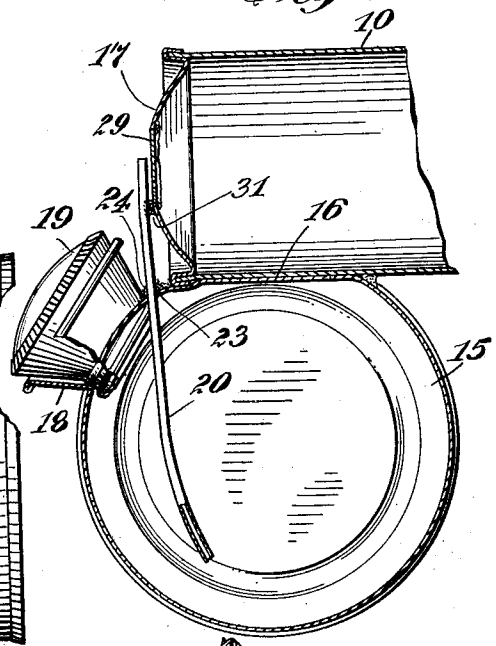


Fig. 4.

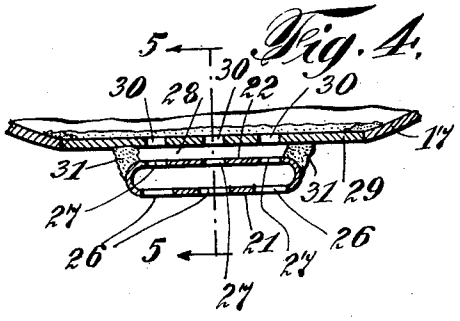
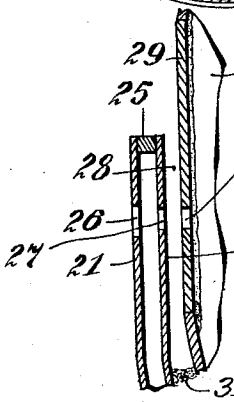


Fig. 5.



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UNITED STATES PATENT OFFICE

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SPRAYER DEVICE

Application filed September 6, 1930. Serial No. 480,055.

This invention relates to insecticide sprayers or atomizers for use in destroying insect pests such as mosquitoes, flies, roaches, ants, and the like, and the invention has for its object the provision of an improved construction of this character whereby to obtain better, more effective and positive results than with the types of devices now in use for the purpose.

An object of the invention is the provision in a device of the kind and for the purpose specified, of means for insuring a fine and dense atomization of the destroying fluid or preparation. In carrying out my invention, I provide a construction having spray discharge openings and two sets of air-blast openings, all in alignment, with an open space in free communication with the outside atmosphere between the two sets of air-blast openings to permit the discharge of excess air while insuring strong copious blasts for effecting the desired atomization.

Another feature of the invention resides in the provision of a construction in which there is a quantitative difference between the cross sectional dimensions of the spray openings, and the air-blast openings, the first-mentioned being larger than the last-mentioned in order to provide strong blasts of air for thoroughly breaking up copious quantities of liquid and thus obtain a fine and dense distribution of mist or vapor from which the more alert and hardy insects cannot escape.

Other aspects and objects of the invention will appear hereinafter. The invention resides in the improved sprayer device and in the form, construction and relative arrangement of its several parts, as will be hereinafter more fully set forth and subsequently incorporated in the subjoined claims.

For a full understanding of the invention reference is to be had to the accompanying drawing, which forms a material part of this application, and in which:—

Figure 1 represents a side elevational view of a sprayer device made in accordance with the present invention;

Fig. 2 represents a front elevational view thereof on a larger scale, parts being broken away;

Fig. 3 is a vertical sectional view, taken on the line 3—3 of Fig. 2;

Fig. 4 represents a fragmentary detail section on a still larger scale, taken on the line 4—4 of Fig. 2; and

Fig. 5 is a further enlarged detail section, taken on the line 5—5 of Fig. 4.

Referring in detail to the accompanying drawing, it will be seen that my improvements are represented as embodied in a sprayer structure of the type conventionally employed for the purpose of spraying the insecticide commonly known as "Flit." This type of sprayer structure comprises an air pump consisting of an elongated cylinder 10, a piston 11 arranged within the cylinder, a piston rod 12 attached at its front end to the piston and slidably extending through the rear end 13 of the cylinder, said piston rod exteriorly of the cylinder being provided with a suitable handle 14. The device further includes a cylindrical fluid receptacle 15 which is attached at 16 in transverse arrangement, as shown, to the forward underneath portion of the cylinder 10 and so that a portion of its curved periphery will protrude a distance beyond the vertical plane of the outwardly cupped head end 17 of the cylinder 10. The receptacle 15 is equipped with a filling neck 18 wherein is screw-threaded a closure plug 19 which may be removed when the receptacle is to be replenished with insecticide.

My invention in its preferred form of construction, as illustrated in the accompanying drawing, comprises a suction tube 20 substantially of rectangular form in cross section so as to provide a front wall 21 and rear wall 22. This flat-formed tube extends from a point within the receptacle 15 and preferably near the curved bottom thereof, to a position in front of the head end 17 of the cylinder 10, said tube passing through the wall of the receptacle at 23 and being firmly secured in position by means of solder 24 or any suitable equivalent means.

According to my invention, the top end of the tube is entirely closed as at 25. Below the closed top end 25, there is provided transversely through the front wall 21 of

the tube one or more spray-discharge openings 26, of which in the present instance three are shown. Through the back wall 22 are provided a corresponding number of air-blast openings 27 in horizontal alignment with the openings 26.

In accordance with a feature of my invention, as best illustrated in Figs. 3, 4 and 5, the flat-formed tube is positioned so that a lateral space 28 is provided between its back wall 22 and the central vertical portion 29 of the head end 17. Through said central vertical portion 29 are provided a corresponding number of air-blast openings 30. My invention is characterized by the fact that the three sets of openings 26, 27, and 30 are provided in horizontal axial alignment, and by the further fact that the spray-discharge openings 26 are of a larger size in cross dimension than the two sets of air-blast openings 27 and 30. Preferably, as shown, all these openings are circular in form. For further maintaining the flat-formed tube rigidly in position, it is attached by means of solder 31 or otherwise to the head end 17, such attachment, it will be noted, being at a distance below the air-blast openings 30 so that the space 28, intervening between the rear wall 22 and vertical portion 29 of the head end, will afford a copious passage for the escape to the outside atmosphere of excess air forcibly blown through the air-blast openings 30.

In the operation of the device, when the piston is forced toward the head end 17, strong blasts of air will be ejected through the sets of aligned openings 30, 27 and 26, and, under the construction shown, excess air which fails to enter directly from the openings 30 through the openings 27 is permitted to escape laterally through the space 28. The air-blasts passing through the openings 27 cause the fluid in the receptacle to rise into the tube between the openings 27 and 26 where the liquid is caught and discharged through the openings 26 in fine mist or vapor.

It is found in practice that the improved device of my invention practically doubles the spraying effect as compared with the effect obtained with the well-known sprayers, for instance the type of sprayer now in use for spraying the product known as "Flit". With each forward movement of the piston, the quantity of fluid drawn up and sprayed is greatly increased and at the same time the fluid is more effectively broken up and reduced to a very fine mist or vapor. Owing to the volume and density of the fine mist or vapor, the insects, even the more alert and hardy ones, are entrapped so that they are destroyed before they are able to escape into atmosphere free of the insecticide.

While I have shown in the present instance the preferred manner of arranging the suction tube and of forming the sets of openings, it is to be understood that in the broad scope of my invention, these features may be modified, formed or spaced in any desired manner and still be within the scope of my invention.

It will now be apparent that I have devised a novel and highly effective sprayer device which embodies the features of advantage enumerated in the statement of the invention and the above description, and while I have, in the present instance, shown and described the preferred embodiment thereof which has been found in practice to be highly effective in destroying insect pests, it is to be understood that the device is susceptible of modification in various particulars without departing from the spirit or the scope of the invention or the scope of the appended claims.

I claim:—

1. A sprayer of the kind described having means for producing blasts of air including a cylindrical body with a head end provided with an aperture, a piston within the body movable toward said head end for the discharge of the blasts of air through said aperture, a suction tube closed at its upper end disposed outside the body with an open space open to the atmosphere between itself and said head end, the front and rear walls of said tube respectively being provided with larger and smaller apertures in line with the aperture of the head end, and a fluid receptacle supported by the body exteriorly thereof adjacent said head end and in which the lower open end of said suction tube is disposed.

2. In a sprayer of the kind described, embodying means for producing blasts of air including a body with a head end provided with a plurality of transverse openings, a fluid receptacle, a tube extending from the receptacle to a position across the openings in said head end and having its outer end closed, said tube having through its outer and inner walls a corresponding plurality of openings in alignment with the openings in said head end and being arranged to provide an independent air space from said head end openings to the outside atmosphere, the openings in the outer wall of said tube being of larger cross sectional dimension than the openings in its inner wall and the openings in said head end.

3. In a sprayer of the kind described, embodying an air pump having a pump head for discharging blasts of air, a fluid receptacle combined with the pump, a suction tube carried by the receptacle, its form being substantially rectangular in cross section with relatively wide front and rear walls so spaced as to provide for the flow between them of a shallow relatively wide stream of fluid, one end of said tube being within the receptacle and the opposite end thereof being outside the receptacle and closed, a portion of said

tube adjacent its closed end being disposed flatwise with respect to said head and with an independent air space between its rear wall and said head, said front and rear walls of the tube opposite said head each being provided with a plurality of spray openings in line with the air blasts discharging from said head, and the spray openings in the front wall being larger than the spray openings in the rear wall.

4. In a sprayer of the kind described, embodying an air pump having a pump head for discharging blasts of air, a fluid receptacle combined with the pump, a single suction tube carried by and projecting from within the receptacle to a position in front of said head, its form in front of said head being substantially rectangular in cross section with relatively wide front and rear walls so spaced as to provide for the flow between them of a shallow relatively wide stream of fluid, the portion of the tube in front of said head being disposed flatwise with respect thereto and so as to provide an independent air space between the rear wall of the tube and said head, the front and rear walls of the tube each having therein a plurality of spray openings in line with the air blasts discharging from said head, the spray openings in the front wall being larger than the spray openings in the rear wall and an air tight closure for the outer free end of said tube.

In testimony that I claim the foregoing as my invention, I have signed my name hereto.

JOHN FITCH.