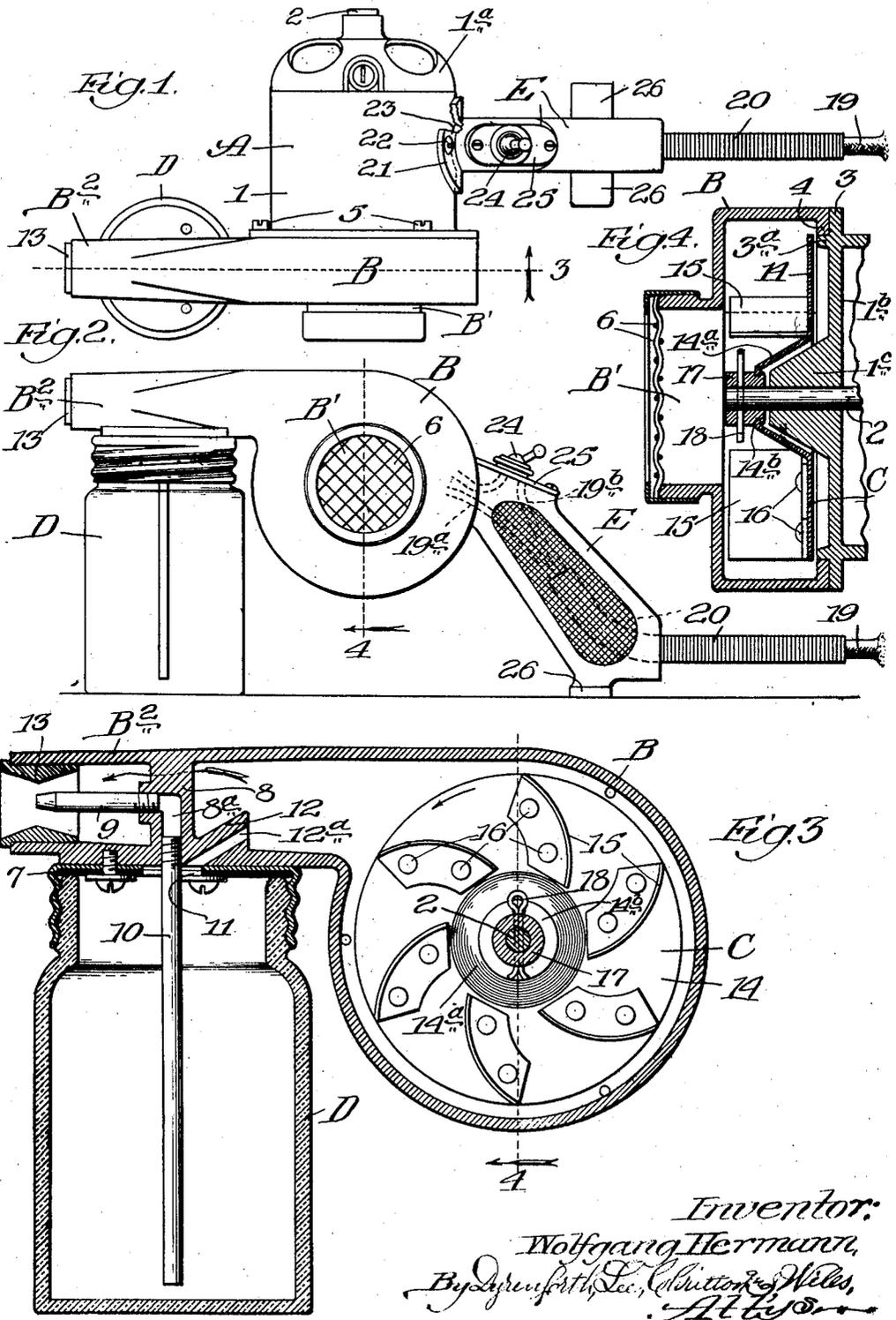


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SPRAYING DEVICE

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UNITED STATES PATENT OFFICE

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SPRAYING DEVICE

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This invention relates particularly to spraying devices which do not require high pressure for effective operation; and the primary object is to provide a simple, compact and highly efficient device of this character which is in the form of a hand-carried unit.

Such a device is adapted for spraying insecticide liquids, and for other analogous purposes.

The invention is illustrated in its preferred embodiment in the accompanying drawing, in which—

Fig. 1 is a plan view (slightly broken) of a spraying device embodying the invention; Fig. 2, a side elevational view of the same; Fig. 3, a sectional view on an enlarged scale, taken as indicated at line 3 of Fig. 1; and Fig. 4, a broken sectional view taken as indicated at line 4 of Fig. 3.

The device, in the illustration given, comprises an electric motor A; a fan-casing B attached to one end of the motor-casing and provided with a central air inlet B' and with an outlet nozzle B²; a fan C housed in the casing B and mounted on an extension of the armature-shaft of the motor; and a liquid-container D depending from the underside of the nozzle B².

The motor A has a horizontal axis. It comprises a casing 1 having at one end a cap 1^a and at the other end an integral end-wall 1^b provided with a bearing 1^c; and an armature (not shown) having a shaft 2 which extends through the bearing 1^c and projects into the fan-casing.

The motor-casing is provided with an external circumferential flange 3 which virtually forms an extension of the end-wall 1^b, and the casing is provided further with an annular flange 3^a which is embraced by an intumed flange 4 with which the open end of the fan-casing B is equipped. The flanges 3 and 4 are connected by cap-screws 5. The intake B' of the fan-casing is shown equipped with a screen 6.

The nozzle B² of the fan-casing is equipped at its lower side with a cap 7 which is adapted to screw onto and make air-tight connection with the liquid-container D. The nozzle is

provided a short distance from its extremity with a vertical post 8 having an angular bore 8^a which has tapped end-portions into which are screwed the liquid-nozzle 9 which is centered in the nozzle B², and the liquid-tube 10 which depends, through an opening 11, into the liquid-container. Back of the interior vertical post 8 is an inclined lug 12 formed integrally with the inner surface of the bottom wall of the nozzle B². Through this lug extends a forwardly and downwardly inclined air-passage 12^a which communicates through the opening 11 with the interior of the liquid-container.

In the illustration given, the nozzle B² is equipped at its end-portion with a Venturi tube, or sleeve, 13. This is shown as formed separately, but obviously may be formed integrally with the nozzle, if desired.

The fan C preferably comprises an aluminum disk 14 and curved blades 15 formed from sheet aluminum and secured to the disk by means of rivets 16. The disk 14 is provided with a central frusto-conical portion 14^a having a perforated end-flange 14^b which is secured to a sleeve 17 fastened on the extremity of the armature-shaft 2, as by means of a cotter-pin 18. The bearing 1^c for the armature-shaft has a frusto-conical outer surface and projects freely into the recess provided by the frusto-conical central portion 14^a of the disk 14.

The motor, the fan-casing, and the liquid-container depending from the nozzle of the fan-casing are intended to be hand-carried. The fan-casing may be of aluminum, and thus may be made quite light. The device is equipped with a handle E which preferably is attached to the cylindrical member 1 of the motor-casing. The handle is hollow and has extending thereinto an electric cable 19 having a flexible metallic covering 20 at the point where the cable enters the handle. This covering may consist of a wire-winding.

The handle E inclines upwardly and toward the fan-casing and is provided at its upper end with a flange 21 which is secured to the motor-casing by means of screws 22. The flange 21 encircles an opening 23 with

which the cylindrical member 1 of the motor-casing is provided. The electric cord 19 has one conductor 19^a extending directly to the motor, and another conductor 19^b extending to a switch 24 which is carried by a removable plate 25.

The handle E is in the nature of a pistol-grip handle by means of which the operator can support the spraying device at arm's length while the spraying operation is being performed. The handle is equipped at its lower end with a foot-piece 26 which is at the same level as the bottom of the container D; hence, the spraying device is capable of resting stably upon a table in the position shown in Fig. 2.

The switch 24 is conveniently located at the upper portion of the handle. The device is put into operation simply by turning on the electric current. This results in forcing air through the nozzle B². Suction is created through the tubes 9 and 10 and the liquid discharging from the inner nozzle 9 is sprayed by the current of air. A portion of the air enters through the port 12^a into the container D, and aids in elevating the liquid which is to be sprayed. The Venturi tube which cooperates with the inner nozzle 9 adds to the efficiency of the device.

The fan C rotates in the direction indicated by the arrow in Fig. 3, and the concavities of the blades 15 are presented in the direction of rotation.

The device, as a whole, is extremely efficient and may be made so light as to enable the combined motor, blower, and container to be readily held at arm's length by the operator during the spraying operation.

The foregoing detailed description has been given for clearness of understanding only, and no unnecessary limitations should be understood therefrom, but the appended claims should be construed as broadly as permissible, in view of the prior art.

What I regard as new, and desire to secure by Letters Patent, is:

1. A spraying device comprising an electric motor provided with a casing having a fan-casing attached to one end thereof and equipped with an air-nozzle having a Venturi terminal, the armature-shaft of the motor extending into said fan-casing, a fan mounted on said armature-shaft, a liquid-container cap attached to the lower side of said air-nozzle, a liquid-tube depending through said cap, and a liquid-nozzle within said air-nozzle communicating with said liquid-tube and cooperating with said Venturi terminal.

2. In combination, a horizontal electric motor having a casing equipped at one end with a fan-casing, said fan-casing having an air-nozzle projecting from the upper portion thereof, the armature-shaft of the motor projecting into said fan-casing, a fan mounted on said shaft, a liquid-container depending

from said air-nozzle, a liquid-tube mounted in the air-nozzle and depending into said container, and a handle rigidly connected with the motor-casing on the side opposite the position of the liquid-container and contacting therewith to support the device at rest.

3. In combination, a horizontally disposed electric motor, a handle rigidly secured to one side of the casing of said motor and provided with a foot-piece, a fan-casing secured to one end of the motor-casing and having its upper portion provided with an air-nozzle, a liquid-container disposed beneath and depending from said air-nozzle and adapted to co-act with said foot-piece in supporting the device at rest, and a liquid-tube attached to said air-nozzle adjacent its discharge end and depending into said container, said air-nozzle being equipped internally with a liquid-nozzle communicating with said liquid-tube.

4. In a spraying device, the combination of an electric motor having a horizontal casing equipped at one end with a wall provided at its outer side with a projecting bearing, said motor having an armature-shaft extending through said bearing, a fan-casing secured to the end of the motor-casing and equipped with an air-nozzle, a fan in the fan-casing comprising a disk secured on said shaft and having a central recess accommodating said bearing and comprising blades secured to said disk, a container-cap secured to the lower side of said air-nozzle, means connected with the air-nozzle for admitting liquid through said cap into the air-nozzle, and a pistol-grip handle secured to the motor-casing at the side opposite where said air-nozzle is located.

5. In combination, a horizontally disposed electric motor, a handle rigidly secured to one side of the casing of said motor and provided with a foot-piece, a fan-casing secured to one end of the motor-casing and equipped with an air-nozzle, a liquid-container disposed beneath and depending from said air-nozzle and adapted to co-act with said foot-piece in supporting the device at rest, and a liquid-tube attached to said air-nozzle adjacent its discharge end and depending into said container, said air nozzle being equipped internally with a liquid-nozzle communicating with said liquid tube.

6. In a hand-portable spraying machine, a rotary air impeller, an annular impeller casing surrounding said impeller, an air discharge duct forwardly extending from the periphery of said casing and carried thereby, a nozzle at the end of said duct, a liquid container detachably secured to the under side of said air duct, a liquid supply duct extending from said container into said air discharge duct and opening in the direction of the opening of said nozzle, an electric motor laterally mounted on one side of said im-

5 peller casing in driving engagement with
said impeller, and a handle downwardly pro-
jecting from said motor.

7. In a hand-portable spraying machine, a
5 nozzle unit having a tubular duct, a nozzle
on one end of said duct, a flat, cylindrical im-
peller casing joined at one point of its
periphery to the other end of said duct and
formed integrally therewith, said casing
10 having a laterally opening cylindrical cham-
ber, a rotary impeller mounted on said cy-
lindrical chamber, a removable closure mem-
ber enclosing the open end of said chamber,
an electric motor driving said impeller and
15 extending from said closure member on the
side opposite to said impeller, and a handle
downwardly projecting from said motor for
carrying and guiding said machine.

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