March 6, 1951 D. C. MANDERS 2,544,539

LIQUID DISPENSER

Filed Nov. 5, 1947

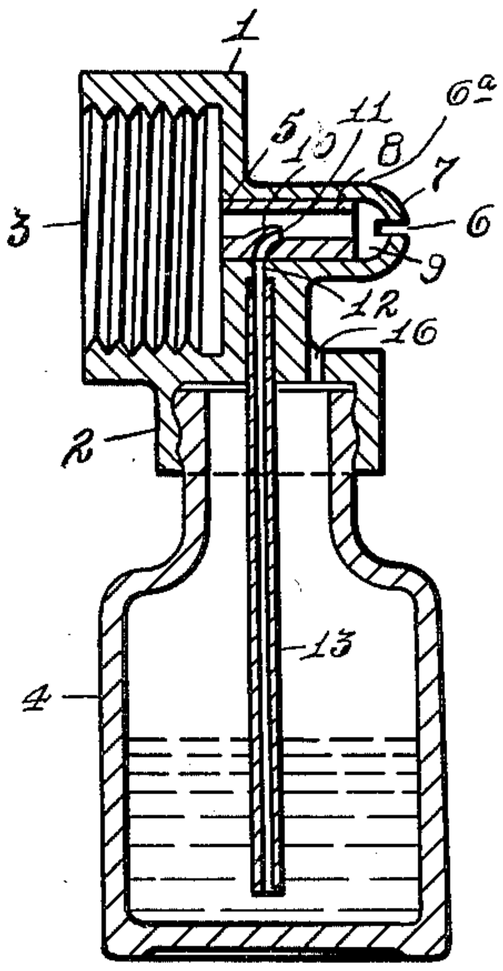

Fig. 2

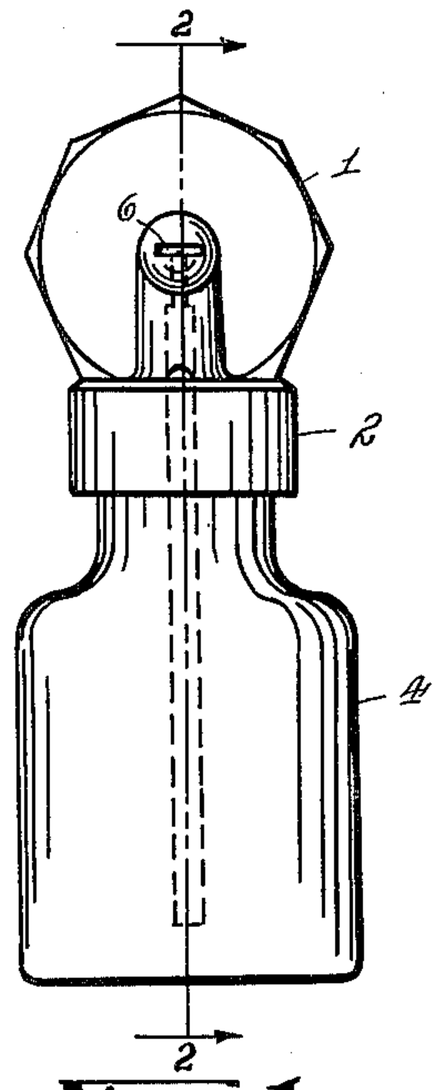

Fig. 1

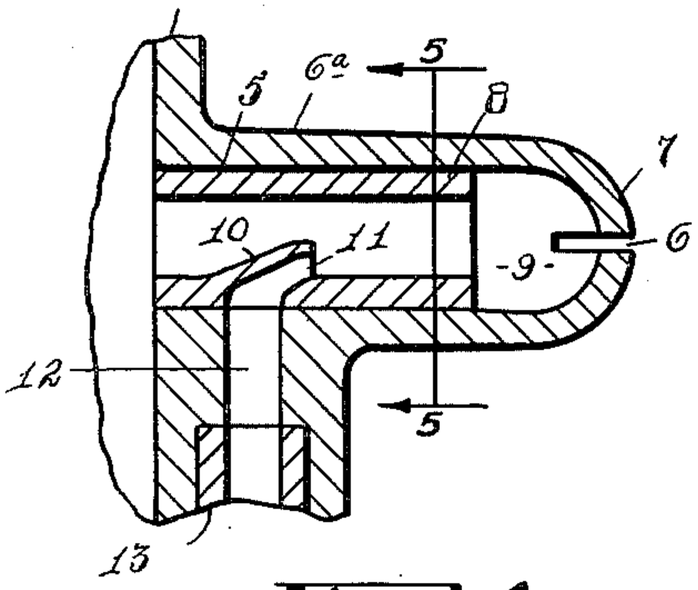

Fig. 4

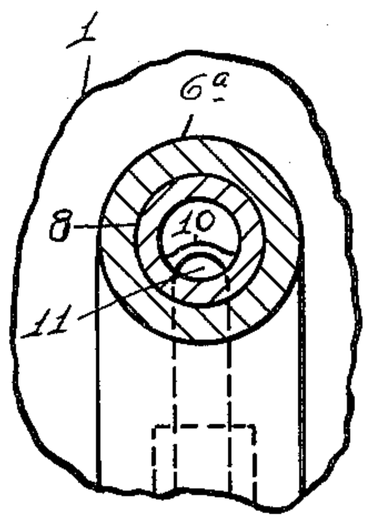

Fig. 5

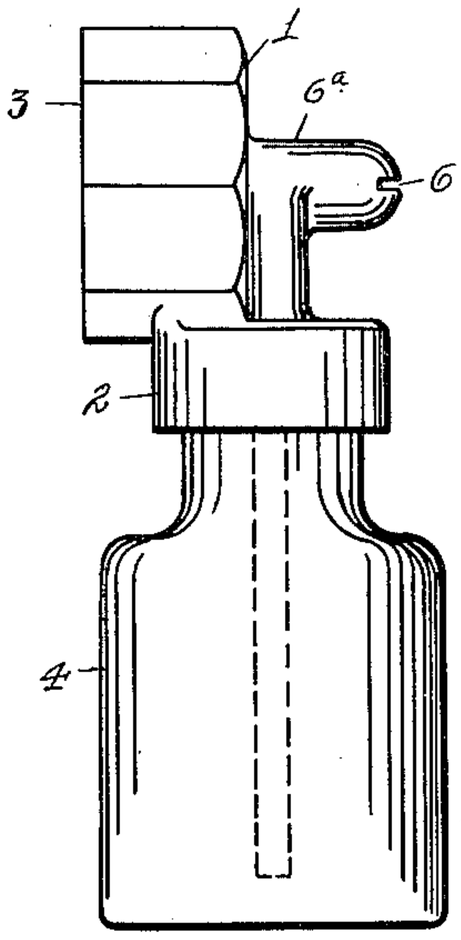

Fig. 3

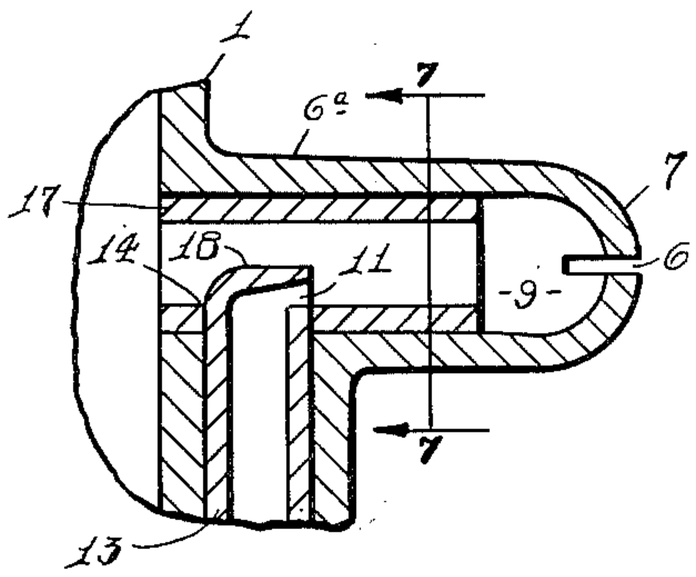

Fig. 6

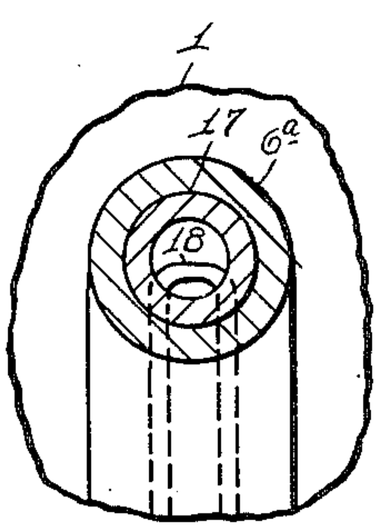

Fig. 7

INVENTOR,
DONALD C. MANDERS

By Rho Lucie
ATTORNEY.

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UNITED STATES PATENT OFFICE

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LIQUID DISPENSER

Donald C. Manders, Toronto, Ontario, Canada

Application November 5, 1947, Serial No. 784,144

1 Claim. (Cl. 299—84)

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The invention relates to improvements in liquid dispensers as described in the present specification and shown in the accompanying drawings that form a part of the same.

The invention concerns particularly means for regulating the flow and mixture of liquids, or mixtures of fluids and powdered substances, and is particularly applicable for use in connection with apparatus in which a regulated stream of water passes through a nozzle or the like, as in spraying or atomizing devices.

One of the main objects of the invention is to provide a dispenser which will dilute a chemical, such as a plant food, weed killer, or an insecticide, with water while being discharged from a hose or tube onto lawns or gardens.

Another object of the invention is to provide means for delivering the chemical with a constant dilution preset to manufacturers' specifications in accordance with requirements and wherein no moving parts likely to get out of order, or to require adjustment, are employed.

A further object of the invention is to provide a convenient way by which to create a very small proportion of the chemical in relation to the water, whereby the chemical may be distributed and sold in a very concentrated form.

And generally the objects of the invention are to provide a simple, efficient and compact liquid dispenser which may be produced at small cost.

With the above and other objects in view the invention consists in the novel features of construction, arrangements and combinations of parts described in the present specification and more particularly pointed out in the claim for novelty following.

In describing the invention reference will be made to the accompanying drawings, in which:

Figure 1 is a front elevation of my improved liquid dispenser.

Figure 2 is a vertical sectional view taken on the line 2—2 of Figure 1.

Figure 3 is a side elevation.

Figure 4 is an enlarged fragmentary section of Figure 2.

Figure 5 is a sectional view taken on the line 5—5 of Figure 4.

Figure 6 is an enlarged fragmentary section through a dispenser embodying a modified Venturi construction.

Figure 7 is a sectional view taken on the line 7—7 of Figure 6.

Like numerals of reference indicate corresponding parts in the various figures.

Referring to the drawings the main structure

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is preferably made of a material which can be readily cast or moulded so that the various passages and openings can be provided in the original casting.

The structure includes a head 1, preferably formed to provide two integral interiorly threaded sockets 2 and 3 respectively, extending at right angles to one another, the socket 2 being on the under face of the head and being for the purpose of attaching the dispenser to a container 4 in which the chemical is carried, and the socket 3 being on one side of the dispenser body and being for the purpose of receiving the usual exteriorly threaded nozzle of a garden hose, or other device whereby water or other fluid may be delivered under pressure to the interior of the dispenser for subsequent delivery in a spray, after having received its complement of chemical.

A passage 5 in concentric register with the socket 3 receiving the nozzle of the water hose, extends through the body of the dispenser in longitudinal alignment with said socket and registers with an aperture, or apertures, 6 in the wall of the dispenser.

The passage 5 is preferably provided by casting or moulding the head to provide a tubular device 6a having its end rounded interiorly and exteriorly, as at 7, and the aperture 6 is preferably formed by slotting the rounded end so that said aperture will take the form of an arcuate slot.

A Venturi tube 8 tightly fitting the wall of the passage 5 extends along said passage from its point of register with the interior of the socket 3 and terminates short of the outlet end of said passage whereby a chamber 9 of greater diameter than the Venturi tube is provided between the end of said tube and the apertured end wall of the passage.

The lower portion of the wall of the tube 8 is preferably thickened, or otherwise formed, to provide an interior boss 10 extending into the path of flow of the water through the tube and having its face on the side towards the outlet of the dispenser extending substantially at right angles to the longitudinal axis of the tube, and this thickened portion is provided with a minute liquid passage 11 discharging through the front face of the said boss in the direction of flow of the water through the tube and into the space below the edge of the forward end of said boss which deflects the water away from the mouth of said liquid passage.

The body of the dispenser is provided with a vertical duct 12 therethrough extending at sub-

stantially right angles to the water passage 5 and registering with the passage 11 through the wall of the tube 8.

A tube 13 registering with the outer end of the vertical duct 12 through the body of the device and extending downwardly into the container 4 provides means for allowing the chemical to pass upwardly to the Venturi tube 8 for dilution and subsequent ejection through the aperture 6.

It is of course apparent that the tube 13 may be dispensed with provided the chemical container and the dispenser are inverted during use to cause the chemical to lie over the mouth of the duct 12.

An opening 16 through the device provides an entry for air to the interior of the container 4 to keep the chemical under atmospheric pressure.

In Figures 6 and 7 a modified form of construction is shown in which a tube 17 of even bore throughout is used in place of the tube 8, and is provided with an opening 14 through its lower wall, and the tube 13 leading into the chemical container is extended upwardly through said opening 14 in the tube 17 and is provided at its upper end within the said tube 17 with a water deflecting portion 18 having a minute discharge opening in the forward side thereof for the passage of chemical from the tube 13.

In the operation of this invention a water conducting hose is screwed into the socket 3 so that water under pressure will be forced through the tube 8 and in passing the opening 11 in said tube will cause a partial vacuum in the tube 13, with the result that the chemical in the container will be siphoned up said tube 13 and out through said opening 11 into the water stream, by means of which it is diluted to the required strength, which is provided for in the proportioning of the various passages and openings in the making of the device. The water and its complement of chemical flows into the chamber 9 and is discharged through the slot 6 in a radial spray. The purpose of the chamber 9 is to equalize the pressure of the liquid over the area of the discharge end of the passage 5 and thus provide for an even fan shaped spray.

While I have illustrated and described the present preferred form of construction for carrying out my invention, these are capable of variation and modification without departing from the spirit of the invention. I, therefore, do not wish to be limited to the precise details of construction set forth, but desire to avail myself of such variations and modifications as come within the scope of the appended claim.

What I claim is:

A mixing and dispensing device including a pipe having an inlet end adapted to receive a motivating fluid and a substantially dome-shaped delivery end having a medial arcuate delivery slot, the said pipe having a duct through one side thereof, a fluid conducting tube extending across said duct within said pipe and terminating short of said dome-shaped delivery end whereby a mixing chamber is provided in said delivery end of said pipe of greater cross sectional area at its inner end than the fluid passage thereto provided by said fluid conducting tube, said fluid conducting tube having an interior boss behind said duct and a passage through one side of said fluid conducting tube connecting with said duct and discharging through the face of said boss in a direction towards said mixing chamber.

DONALD C. MANDERS.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
560,922	Pearson	May 26, 1896
674,188	Schratz	May 14, 1901
1,001,461	Schratz	Aug. 22, 1911
1,691,223	Brooks et al.	Nov. 13, 1928
1,972,955	Saugman	Sept. 11, 1934
2,069,352	Brookshire et al.	Feb. 2, 1937
2,246,211	Kilich	June 17, 1941
2,302,799	Peterson	Nov. 24, 1942
2,381,589	Hayes	Aug. 7, 1945