Sept. 21, 1965 R. BRICKMAN 3,207,387

PORTABLE SPRAYER

Filed Oct. 16, 1963

FIG. 1.

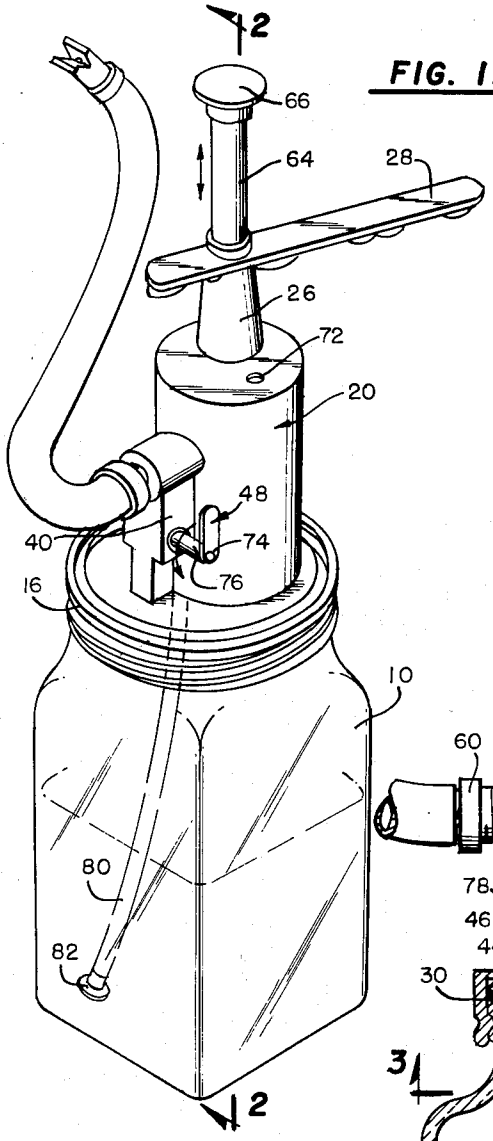



FIG. 2.

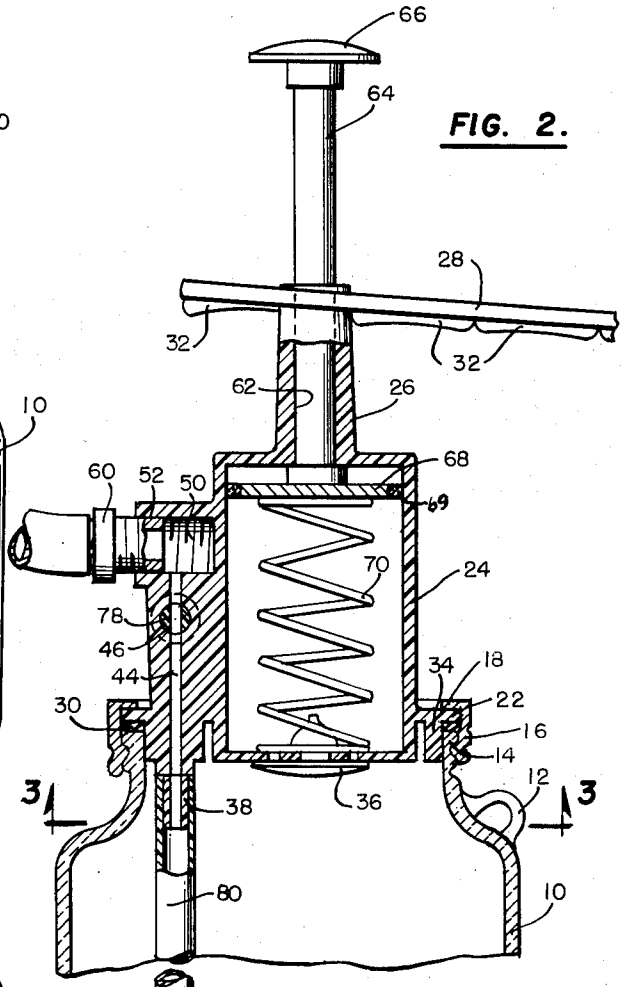
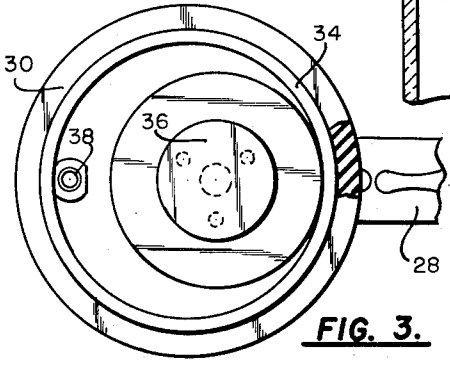



FIG. 3.




INVENTOR

Robert Brickman

BY Lawrence J. Field

ATTORNEY

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3,207,387

# PORTABLE SPRAYER

Robert Brickman, 3212 Pauline Drive, Chevy Chase, Md.

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1 Claim. (Cl. 222—400.8)

This invention relates to a portable sprayer. More particularly it relates to an improvement over the spray gun described in my copending patent application Serial No. 133,938, filed August 25, 1961, which application issued as United States Patent 3,127,070 on March 31, 1964.

The spray gun described in my earlier application comprised:

- an elongated body having an integral grip portion and an integral cap portion adapted for quick detachable connection with an open topped portable reservoir;
- an air pump housed in the elongated body and having its outlet discharging through the cap for filling the upper portion of said reservoir with compressed air;
- means for operating said air pump including a lever member movably attached to the elongated body;
- a nozzle mounted on the front end of the elongated body;
- a conduit extending from the nozzle through the cap and downwardly therefrom into the reservoir;
- and an adjustable valve in the conduit having control means positioned for operation by the hand holding and manipulating the spray gun and pump.

I have found that the mechanism described in my earlier application may be simplified whereby the cost of manufacture of the spraying device is reduced and the likelihood of mechanical or operational failure is diminished.

One object of the invention is to provide a spray gun having a grip operated pump wherein all of the mechanism for operating the spray gun can be simultaneously operated by the gun-holding hand of the user, thus freeing his other hand for correlated activities.

It is another object of the invention to provide such a one-hand spray gun with a threaded standard cap base whereby the same can be screwed onto a standard Mason jar, or like container, serving as a readily available and easily replaceable reservoir for the spraying liquids.

It is a further object of the invention to provide a device of the character described having a hand-engageable pump lever and a spray control positioned for finger and/or thumb operation by the hand embracing the grip portion of the pump lever mounting means.

Still another object is to provide a spray gun having a minimum number of moving parts which is easy to disassemble, clean and reassemble.

A more specific object is to provide a spray gun in which a single body molded of a durable synthetic resin serves as the support and housing for all of the other portions of the apparatus.

A further object is to provide a spray gun which may be used selectively with a hose to permit a spray head to be brought into close proximity with the target to which the spray is to be applied *or* from which the hose may be readily removed when a wider broadcast of the spray is desired, for example when spraying a liquid fertilizer or insecticide in a garden.

These and other objects of the invention will become apparent from the following description of a specific embodiment of the invention taken in conjunction with the drawings in which:

FIGURE 1 is a perspective view of the sprayer;



FIGURE 2 is a view partly in section taken in plane 2—2 of FIGURE 1 passing through the central axis of the apparatus and through the center of the more prominent structural elements; and

FIGURE 3 is a view of the body portion looking in the direction of plane 3—3 of FIGURE 2.

In the drawings there is shown a vessel **10** which serves as a reservoir for the liquid to be sprayed. Vessel **10** may be a standard Mason jar of glass or it may be made of plastic or other suitable material. It is preferred that vessel **10** be transparent or translucent so that the contents of the vessel may be readily visible. Vessel **10** may also have a handle **12** for attachment of a sling or shoulder strap to assist the user in carrying the sprayer from place to place. Vessel **10** has an open mouth and on the outer periphery of the neck is provided with threads **14** or other means for coupling it to the molded plastic unit **20** which constitutes the principal element of the spray apparatus, and which supports or houses all of the remaining elements of the spray gun.

Plastic body **20** is removably attached to vessel **10** by means of a threaded metal ring **16** adapted to screw onto threads **14** on the vessel **10**. A flange **18** on ring **16** engages a shoulder **22** on the plastic body, when the ring **16** is screwed onto the vessel **10** and holds the plastic body firmly seated on the vessel **10**. A washer **30** is positioned on the lip of the mouth of vessel **10**, so as to provide a tight seal when ring **16** is screwed onto threads **14**. Metal ring may be eliminated e.g. by providing threads on plastic body **20** so that it may screw onto or into vessel **10** directly.

Molded unit **20** is formed of a hard plastic and includes shoulder **22**, noted above; a barrel portion **24** having a generally cylindrical shape and serving as the cylinder in which an air pump piston operates; a mast **26** extending upwardly from the central portion of the barrel portion and adapted to receive the piston rod to which the air pump piston is attached; a handle **28** formed integral with the extension mast **26** and provided with ridges **32** on its lower surface to facilitate gripping of the handle **28** when operating the spray.

In addition, molded plastic unit **20** includes a boss **40** extending toward the front of the spray apparatus. Boss **40** is provided with a vertical passage **44** extending into vessel **10** and connecting the vessel with an outlet port **50** in the upper portion of plastic unit **20**.

Adjacent the lower end of barrel portion **24** there is a flange **22** on the outer surface of the plastic body **20**. Depending from this flange and molded integral therewith is an annulus **34** of somewhat larger diameter than the barrel, annulus **34** being dimensioned so as to fit more or less snugly into the open mouth at the top of jar **10**. As noted above, annulus **34** could be threaded so as to couple directly onto vessel **10**. The lower end of barrel **24** is closed except for a small central opening into which there is fitted a one-way valve **36** such as the rubber plug described in U.S. Patent 2,068,481. At the front of the base of the unit **20** between barrel portion **24** and annulus **34** a stepped tube **38** extends downwardly into jar **10**. Tube **38** is provided with a passage which extends from the top of tube **38** upwardly and which constitutes an extension of passage **44** in boss **40**. The lowermost portion of tube **38** has a slightly reduced diameter at the tip and is gradually tapered as it extends upwardly so as to securely hold a plastic tube **80** which terminates in a strainer **82** spaced slightly above the bottom of jar **10**.

Near the upper end of passage **44** there is a valve **46** which may be rotated by means of handle **48** so as to seal off passage **44** either partially or completely. Passage **44** terminates in an enlarged chamber **50** which is open at its front end at which it terminates in a screw threaded

discharge port **52**. Either a hose **60** or a spray nozzle may be insetred into the port **52**, depending on the manner in which the spray is to be applied.

Mast **26** is provided with a central bore **62** in which a plunger **64** may reciprocate freely. Plunger **64** has a palm engaging knob **66** at its upper end and carries a piston **68** and a leather washer **69** at its lower end. A spring **70** is disposed in barrel **24** between piston **68** and the lower end of barrel **24** so that piston **68** is constantly urged upwardly.

A port **72** is provided in the upper end of barrel **24** for the admission of oil to lubricate the piston **68** and for the admission of air into the space above the piston, this being the air which valve **36** released into vessel **10** when the air pump is operated.

The lever for actuating valve **46** has a handle **74** and a main body portion **76** molded therewith and adapted to be received into a tapered recess **78** in boss **40** of unit **20**. Body **76** supports a washer (not shown) and a spring is pinned between one side of boss **40** and the washer to facilitate easy operation of the handle **48**.

It will be seen that the sprayer described may be manually operated using only one hand by curling the fingers under handle **28**, while engagin knob **66** with a portion of the palm and manipulating knob **48** with the index finger or thumb, or both.

It is believed that the operation of the portable sprayer will be evident from the preceding description from which it will be seen that actuation of the air pump builds up air pressure in vessel **10**, in the space above the liquid, and that on opening valve **46** so as to place hose **60** in communication with the vessel **10**, by way of passage **44** and tube **80**, the liquid in the vessel is expelled through hose **60** and the nozzle carried at the outer end of hose **60** and emerges as a spray.

Having now described a preferred embodiment of my invention it is not intended that it be limited except as may be required by the appended claim.



I claim:

A spray gun unit comprising: a molded plastic member including a cap engaging portion adapted for quick detachable connection with an open topped portable reservoir; a hollow mast integral with said molded plastic member and extending upwardly from said body, a handle integral with said mast located at the top thereof; an air pump housed in the upper portion of said body and having an outlet discharging through the base of said member for filling the upper portion of said reservoir with compressed air, said air pump consisting of a piston reciprocable in a chamber comprising the major portion of the body of said molded plastic member and a piston rod attached to said piston and reciprocable in a bore in said upwardly extending mast on said member, there being an air inlet in said member above said piston and an air outlet in said member below said piston; means for operating said air pump including a lever member supported by said body; a plastic tube extending downwardly from said body and into said reservoir so as to approach the bottom of said reservoir; a flexible conduit mounted on the front end of said body; an adjustable rotary valve in said body and valve control means positioned for operation by the hand holding and manipulating said flexible conduit and said pump.

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LOUIS J. DEMBO, *Primary Examiner.*

HADD S. LANE, *Examiner.*