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REVERSE-FLUSH GUN

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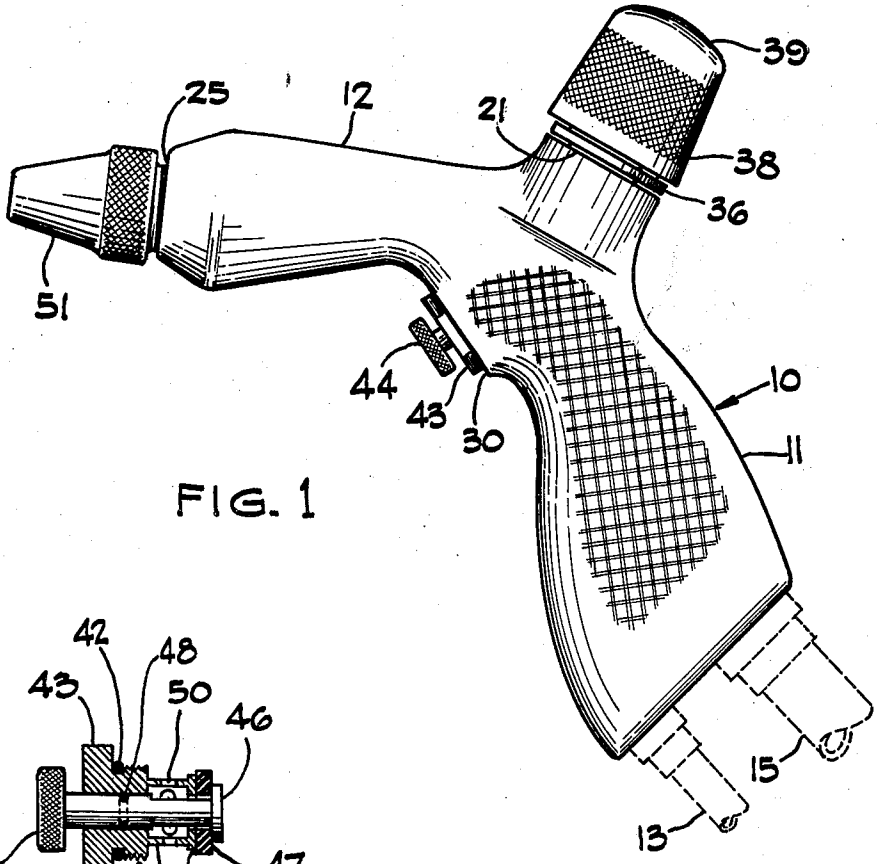


FIG. 1

FIG. 3

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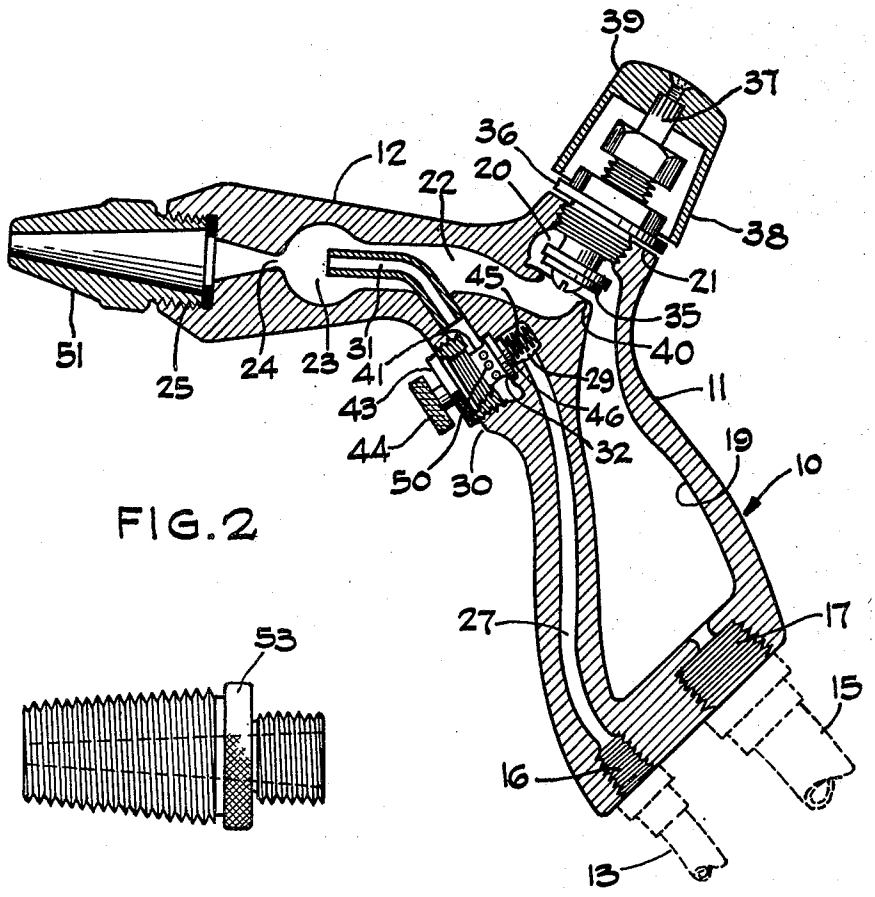


FIG. 2

FIG. 4

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REVERSE-FLUSH GUN

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1 Claim. (Cl. 239—413)

This invention relates generally to an improved spray gun and more particularly relates to an improved combined air and water spray gun arranged for spraying, flushing and cleaning purposes.

A principal object of the present invention is to provide a simpler and more compact spray gun arranged with a view toward efficiency and ease of operation and accessibility to the operating parts therefor.

A further object of the invention is to provide a simpler and more compact spray gun adapted for the spraying of air, water, a mixture of air and water, and a mixture of air and cleansing fluid through the nozzle of the gun.

Still another object of the invention is to improve upon the spray guns heretofore in use by eliminating all complicated valving and instead using standard forms of valving which may readily be replaced as units from the outside of the body of the gun.

A still further object of the invention is to provide a novel spray gun having a pistol grip and body extending therefrom at an angle, in which an air valve is on the underside of the gun for ready accessibility by the fingers of the hand, and a water valve is on the opposite side of the body of the gun, and in which the angular relation between the handle and barrel of the gun is such as to provide for ease in trailing of the air and water hoses, supplying air and water to the gun.

These and other objects of the invention will appear from time to time as the following specification proceeds and with reference to the accompanying drawings wherein:

FIGURE 1 is a plan view of a spray gun constructed in accordance with the principles of the present invention;

FIGURE 2 is a longitudinal sectional view taken through the gun shown in FIGURE 1;

FIGURE 3 is a detail fragmentary sectional view of the air valve used; and

FIGURE 4 is a view of an adapter used to connect the gun to a radiator hose.

In the embodiment of the invention illustrated in the drawings, we have shown a spray gun including a body 10, a pistol grip handle 11 and a barrel 12 projecting from the handle 11 at an angle with respect thereto which may be an angle of substantially 120°, to accommodate the ready trailing of an air hose 13 and a water hose 15 threaded within air and water inlets 16 and 17 respectively, leading into the rear end portion or flat bottom of the handle 11.

The water inlet 17 leads into a passageway 19 extending along the handle 11 and having communication with a valve chamber 20 opening through an upper inclined face 21 at the juncture between the handle 11 and the barrel 12. A water passageway 22 leads from the valve chamber 20 and has communication with an enlarged chamber 23, converging to a throat 24, diverging to a threaded outlet 25, opening to the front end of the barrel 12.

The air inlet 16 has communication with a passageway 27 leading along the handle 11 and communicating with a valve chamber 29 at the juncture between the handle 11 and the valve 12, on the opposite side thereof from the valve chamber 20, and opening through a face 30. A passageway 31 leads from the valve chamber 29 to the enlarged diameter chamber 23 in axial alignment with the throat 24 to supply air under pressure to said chamber,

under the control of an air valve 32, in the valve chamber 29.

The valve chamber 20 has a water valve therein, which may be a common household water valve and includes a body 36 threaded within the chamber 20 from the face 21 of the body 10 and having a stem 37 threaded therein having a resilient disk valve 35 at its inner end, seating against a seat 40 extending about the lower end portion of the valve chamber 20, to block the flow of water from the passageway 19 through the passageway 22. The stem 37 has an operating knob 39 on its outer end portion for turning said stem to move the disk valve 39 into and out of engagement with its seat 40. The knob 39 is shown as being in the form of a bonnet having a skirt portion 38 enclosing the external portion of the valve body and knurled along its outer side, to accommodate ready opening and closing of said valve.

The air valve 32 is shown as being a well known form of poppet valve and includes a hollow valve body 41 having a hexagonal head 43 at its outer side, to accommodate the ready threading of the valve body 41 within the valve chamber 29. An O-ring 42 is provided to seal the valve body to the chamber 29.

The air valve 32 is a poppet type of valve and includes a plunger 44 guided in the valve body 41 and hexagonal head 43, having an operating knob or button on its outer end for depressing the plunger against a compression spring 45, seated in the bottom of the chamber 29 at one end and on a disk 46 on the inner end of the plunger 44 at its opposite end. A valve disk 47 (FIGURE 3) encircles the plunger 44 and is interposed between the disk 46 and the inner side of the valve body 41, to control the flow of air through said valve body. The spring 45 biases the plunger 44 in extended relation with respect to the valve body 41 and the valve disk 47 into sealing engagement with a seat 49, extending about the bottom or inside of the valve body 41. An O-ring 48 is provided to seal the plunger 44 to the valve body 41. The valve body 41 has a plurality of cross drilled passageways 50 accommodating the flow of air from the chamber 29 through the passageway 31 into the enlarged portion 23 of the passageway 22.

Upon opening of the water valve 35 by turning the knob 39, and upon the depression of the plunger 44, air will enter the enlarged diameter chamber 23 in axial alignment with the center of the throat 24, and break up and force the water out through the restricted throat 24 and outlet 25, through a nozzle 51 threaded in said outlet and projecting forwardly therefrom. The chamber 23 and throat 24 thus form in effect a venturi and the admission of air under pressure to said chamber creates a vacuum at the inlet end of said throat which serves to draw the water through said throat and break up the water into fine particles in the form of a high pressure spray as it leaves said throat and is discharged through the nozzle 51.

Air entering the chamber 23 under pressure also serves as an aspirator, to not only break up and draw water through the passageway 31, but also to draw other liquids, such as cleansing agents through the passageway 31 for discharge under pressure in the form of a spray. As for example, the water hose 15 may be disconnected from the inlet 17 and another hose (not shown) may be connected to said inlet and lead from a receptacle (not shown), containing cleansing fluid. The cleansing fluid may thus be drawn from the receptacle by the aspirating effect of the air entering the chamber 23, and sprayed at high velocity under pressure onto an air internal combustion engine or other device, to remove grease therefrom.

An adapter 53 may also be threaded in the outlet 25 in place of the nozzle 51 and threaded within a radiator

hose of an internal combustion engine. The air valve 32 may then first be opened to break up corrosive particles in the radiator. The water valve 35 may then be opened with the air valve 32 to effect reverse flushing of the radiator, it being understood that the adapter 53 is threaded within the lower hose connection, which has been removed from the engine and that the upper hose connection is also removed from the engine to accommodate the forcing of water by the gun out through the upper hose connection.

It may thus be seen that the spray gun of the present invention may be used as an air gun only, a water gun only, to discharge water at household pressures, a combined air and water gun in which the air not only breaks up the water in the form of a spray but also draws the water through the gun at increased pressures and discharges the water through the nozzle 51 in the form of a high velocity spray.

It may further be seen that the air may be used to draw cleansing fluid from a storage container and discharge the cleansing fluid through the nozzle 51 to clean grease from engines and the like, in a simple and efficient manner.

It may further be seen that the control valves for the water and air are extremely simple forms of valves and are readily accessible from the outside of the body of the gun for repair or replacement, and are placed at convenient locations for operation by the operator of the gun.

While we have herein shown and described one form in which our invention may be embodied, it may readily be understood that various variations and modifications in the invention may be attained without departing from the spirit and scope of the novel concepts thereof, as defined by the claim appended hereto.

We claim as our invention:

In a combined air and water spray gun,

(*a*) a body having a barrel,

(*b*) a hand grip extending downwardly of said barrel at an angle when said barrel is in a generally horizontal operative position,

(*c*) said hand grip having a flat downwardly facing rear face having spaced inlets therein having

(*d*) air and water hoses connected thereto and trailing therefrom,

(*e*) a water passageway leading from said water inlet through said hand grip and barrel to a discharge nozzle,

(*f*) a valve chamber in said water passageway, opening to top side of said body at the juncture between said hand grip and said barrel, when said body is held in an operative position,

(*g*) an air passageway leading from said air inlet and communicating with said water passageway downstream of said water valve chamber,

(*h*) an air valve chamber in said air passageway opening to the opposite side of said body for said water valve chamber at the juncture between said hand grip and barrel,

(*i*) and unitary air and water valves removably mounted in said respective air and water chambers, and having operating members on the outside of said body, readily accessible to the operator of the gun.

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