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R. L. PUMPHREY

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CLEANING NOZZLE

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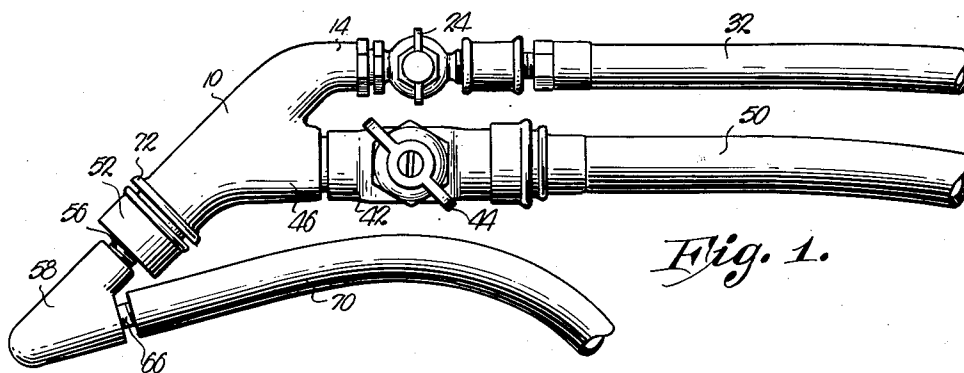


Fig. 1.

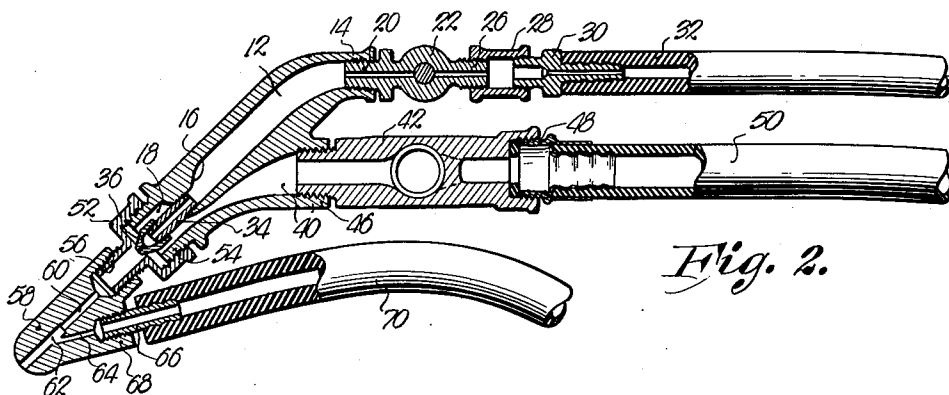


Fig. 2.

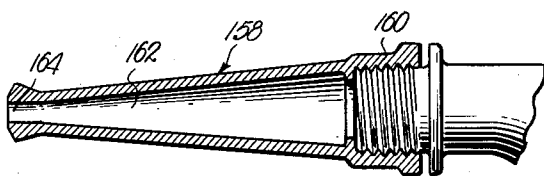


Fig. 6.

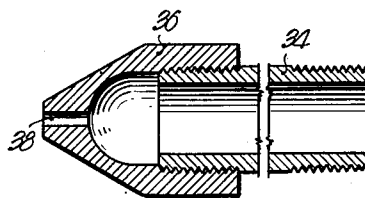


Fig. 4.

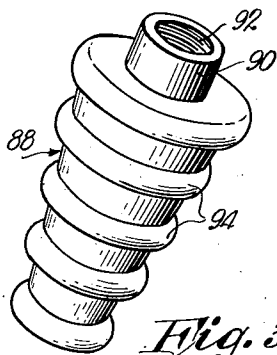


Fig. 3.

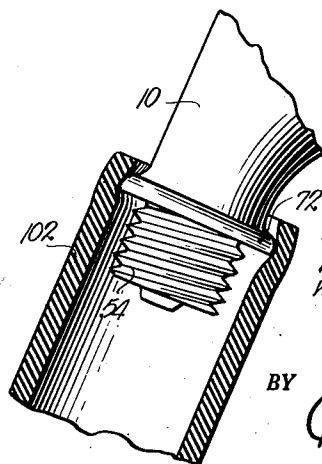


Fig. 5.

Roy L. Pumphrey, deceased
By Sallie Mae Pumphrey
Widow and Sole Heir
INVENTOR.

BY *Ed. Honey*
ATTORNEY.

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CLEANING NOZZLE

Roy L. Pumphrey, deceased, late of St. Joseph, Mo., by Sallie Mae Pumphrey, St. Joseph, Mo., widow and sole heir.

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1 Claim. (Cl. 299—140)

This invention relates to cleaning devices and more particularly to a means for cleaning grease, dirt and other foreign matter from automobile fenders, bodies, chassis and engines.

The most important object of the present invention is to provide an improved cleaning device in the form of nozzle structure in which several different kinds of fluid may be mixed and ejected under pressure against a part which is to be cleaned.

Another object of this invention is to provide nozzle structure wherein several different attachments may be used with the main nozzle structure so that a number of different cleaning operations may be performed with a single device.

A further object of this invention is to provide a nozzle structure of this kind wherein at least three different fluids may be mixed and projected against the desired article which is to be cleaned, the fluids including air and at least two liquids.

A still further object of this invention is to provide a mixing nozzle structure which is constructed in gun type form so that it can be readily and easily held in the hand and which includes means whereby the desired quantity of fluid or combination of fluids under pressure may be projected against the article which is being cleaned or dried.

A further object of this invention is to provide a nozzle structure which is so constructed that it may also be used to blow out obstructions in vehicle radiators, the device being so constructed that it can be inserted in an end of a flexible hose connection between the radiator and the engine or, if desired, an attachment may be applied to the nozzle structure which attachment may be inserted into the flexible hose connection.

To the foregoing objects and others which may hereinafter appear, the invention consists of the novel construction, combination and arrangement of parts as will be more specifically referred to and illustrated in the accompanying drawing wherein is shown an embodiment of the invention, but it is to be understood that changes, variations and modifications may be resorted to which fall within the scope of the invention as claimed.

In the drawings:

Figure 1 is a side, elevational view of nozzle structure made in accordance with the teachings of the present invention.

Fig. 2 is a side, elevational view of the nozzle structure of Fig. 1, parts being broken away and in section to reveal details of construction.

Fig. 3 is a perspective view of an attachment which may be used with the structure of the present invention.

Fig. 4 is an enlarged, longitudinal section of the air nozzle or jet shown in Fig. 2.

Fig. 5 is a fragmentary, side, elevational view, showing the manner of mounting a flexible hose connection on the forward end of the nozzle structure, the hose connection being shown in section; and

Fig. 6 is a detailed, side, elevational view of another

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nozzle attachment which may be used with the structure of the present invention.

Referring now to the drawing, the numeral 10 designates generally a body which is provided on the inside thereof with an air passage 12 which opens through an extension 14 provided at one end of the body 10. The air passage 12 at the forward end of the body 10 is restricted as at 16 and the body 10 is provided forwardly of the air passage 12 and in alignment therewith with a mixing chamber 18 which is relatively larger in diameter than the air passage 12. The extension 14 is provided with interior threads to receive the threaded end 20 of a valve member 22. The valve member 22 is a conventional valve of the needle type provided with a handle 24 and the opposite end of the valve structure 22 is provided with a threaded portion 26 engaging in a coupling member 28. A threaded coupling member 30 carried by an end of a flexible hose 32 is adapted to be threaded into the coupling member 28. The hose 32 is preferably an air hose which at the opposite end thereof is connected to a suitable source of air pressure so that opening of the valve 22 by rotation of handle 24 will permit air under pressure to enter the air passage 12 and pass there-through. A relatively short nipple 34 is threaded into the forward end of the air passage 12 and is provided with a cap or nozzle 36 having a relatively small opening 38. This nozzle structure 34—36 is disposed in the mixing chamber 18.

The body member 10 is also provided with a fluid passage 40 which extends laterally of the air passage 12 and which at its forward end communicates with the mixing chamber 18. A valve member 42 having an actuator 44 is threaded into a boss 46 on the body 10 and this valve member 42 is adapted to be connected as by a connecting member 48 to a hose 50. The hose 50 is adapted to be connected to a pressurized source of liquid supply preferably water.

A cap 52 is threaded onto a reduced forward end portion 54 of the body 10 and this cap 52 is provided with an exteriorly threaded nipple 56 forming an extension of the mixing chamber 18. A nozzle attachment 58 provided with a bore 60 is threaded onto the nipple 56 with the bore 60 disposed axially of the center of the nipple 56. The bore 60 opens at its forward end into a forward mixing chamber 62 which communicates at its outermost end with the atmosphere. An angularly disposed fluid passage 64 is formed in the nozzle member 58 and at its forward end communicates with the forward or outer mixing chamber 62. A threaded nipple 66 is threaded into a boss 68 formed in the attachment 58 and a hose 70 is secured in any suitable manner to the nipple 66 with the opposite end of the hose 70 connected to or inserted in a liquid reservoir (not shown) which is adapted to contain a cleaning compound such as kerosene, a soap compound or the like. The cleaning fluid passage 64 extends at an acute angle to the length of the bore 60 so that the hose 70 will be positioned closely adjacent the two valve members 22 and 42. In this manner, when the device is in use, the two valve members 22 and 42, together with the hose 70, may be grasped in one hand.

Where it is desired to use the device with only water or only water and air, so as to force obstructions out of pipes or radiators, an attachment (Fig. 3) generally designated as 88 may be threaded onto the threaded end 54 of the body 10 after removing the cap 52. The nozzle attachment 88 is constructed in the form of a tapered body having a nipple 90 at its inner end provided with threads 92 adapted for coupling with the end portion 54. The exterior surface of the nozzle attachment 88 is provided with a plurality of annular ribs 94. The nozzle attachment 88 is adapted to be inserted into an end of

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a flexible hose such as is used at present to connect a radiator with a vehicle engine and, by providing the ribbed portions 94, the nozzle member 88 may be used with hose connections of different diameters. Where the hose connection 102 is of relatively small diameter (Fig. 5), the nozzle member 88 may be removed from the reduced portion 54 of the body 10 and the hose 102 slipped over an annular rib or flange 72 which is integral with the body 10 and positioned at the rear portion of the threaded part 54. This adaptation is illustrated in Figure 5.

In Fig. 6, there is illustrated another nozzle attachment which may be used with the mixing device of the present invention and in which a nozzle 158 is adapted to have the inner or large end 160 threaded onto the nipple 54. The nozzle 158 is provided with a tapering bore 162 terminating in a straight or cylindrical bore 164. This type of nozzle may be used where a small stream of great force is desired.

In the use and operation of this device, assuming that it is desired to project a cleaning fluid onto a part to be cleaned, such as the body, engine or fenders of a motor vehicle, the hose members 32 and 50 are adapted to be connected to suitable sources of air and water supply respectively and the free end of the hose 70 is adapted to be placed in a receptacle containing a cleaning compound, such as kerosene, a soap preparation or the like. The actuator 44 of the valve member 42 is opened to permit the desired amount of water to flow through the water passage 40 into the mixing chamber 18. The handle 24 of needle valve 22 may be adjusted to admit the desired air pressure to the mixing chamber 18 through nipple 34. The air passing through the nozzle or jet member comprising the two parts 34 and 36 will place the water under the desired pressure which will then flow through the bore 60 into the outer mixing chamber 62. The flow of the water and air outwardly through the mixing chamber 62 will form a partial vacuum in the fluid passage 64 so as to draw up through the hose 70 the desired cleaning fluid.

Where it is desired to use this device without the cleaning fluid and to project a concentrated stream of air and water against an article to be cleaned, the attachment 58 and the cap 52 may be removed as a unit from the nipple 54 and replaced with the nozzle 158 shown in

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Fig. 6. The valve members 22 and 42 may then be opened to the desired degree. Without any attachment on the forward end 54, the nozzle 36 may furnish the desired flow of clean dry air for use in drying or dusting by opening valve 22 and leaving valve 42 closed.

The end portion 54 is provided with a standard garden hose thread so that the female end of a garden hose may be connected thereto and a short length of hose used to clean desired portions of the vehicle, such as windows, body or the like.

Having thus described the invention, what is claimed as new and desired to be secured by Letters Patent is:

In a cleaning nozzle, a body having a first chamber at one end thereof, an air passage provided with an inlet end and an outlet end, and a water passage provided with an inlet end and an outlet end, the outlet end of the water passage communicating with said chamber; a first tubular nipple within the chamber and said outlet end of the air passage, axially aligned with the air passage and coaxial with the chamber; a nozzle releasably attached to said nipple within the chamber having a tapered outermost end provided with a restricted air outlet opening; a cap provided with a second tubular nipple communicating with the chamber and receiving said end of the nozzle in axial alignment with said opening, said cap being screw-threaded on said end of the body for movement of the second nipple toward and away from said nozzle for varying the flow of water from the chamber to the second nipple; and a nozzle attachment releasably mounted on said second nipple and provided with a bore, axially aligned with the second nipple and terminating in a length of enlarged diameter communicating with the atmosphere, presenting a second chamber, and a cleaning liquid passage having an inlet and provided with an outlet communicating with the second chamber.

References Cited in the file of this patent

UNITED STATES PATENTS

1,466,247	Pickop	Aug. 28, 1923
1,827,301	Smith	Oct. 13, 1931
2,072,281	Simonin	Mar. 2, 1937
2,143,817	Longdin	Jan. 10, 1939
2,245,195	Hopkins	June 10, 1941