Jan. 23, 1951 E. C. HORTON 2,538,905

FLUSHABLE NOZZLE

Filed March 1, 1947

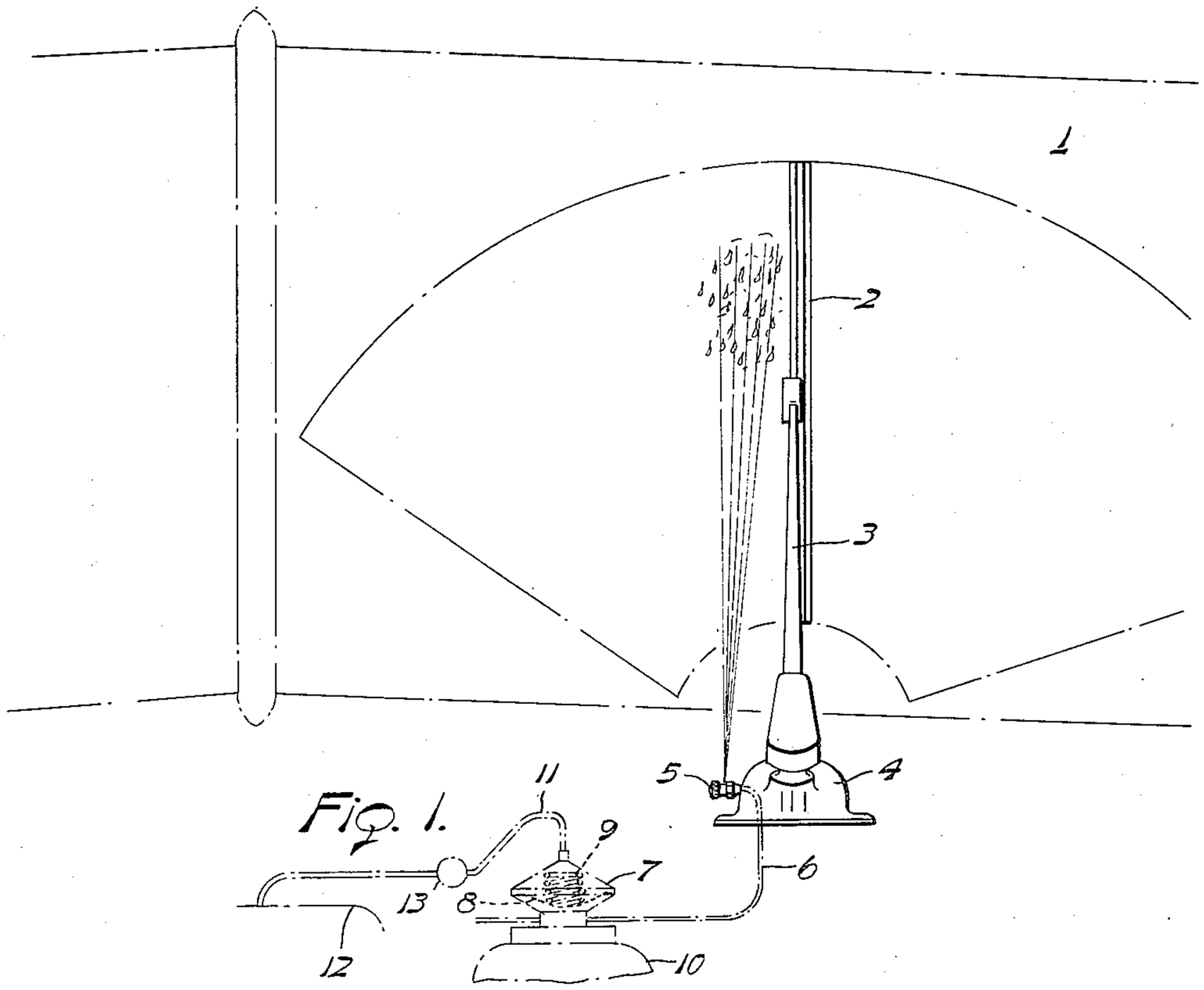
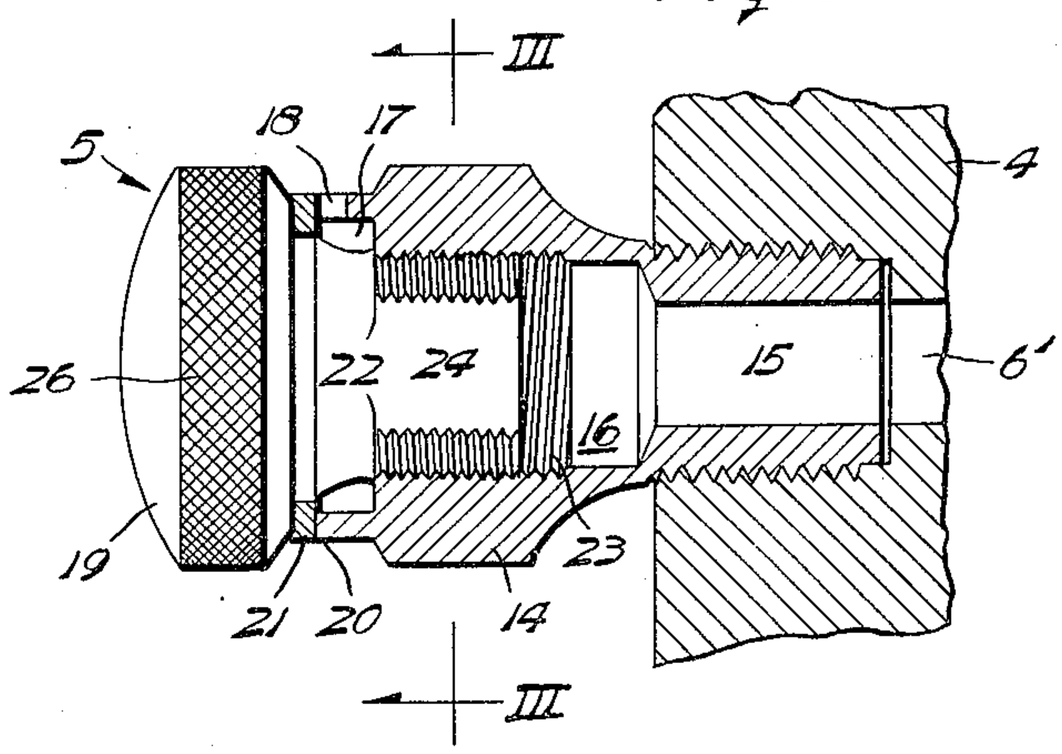


Fig. 1.

Fig. 2.



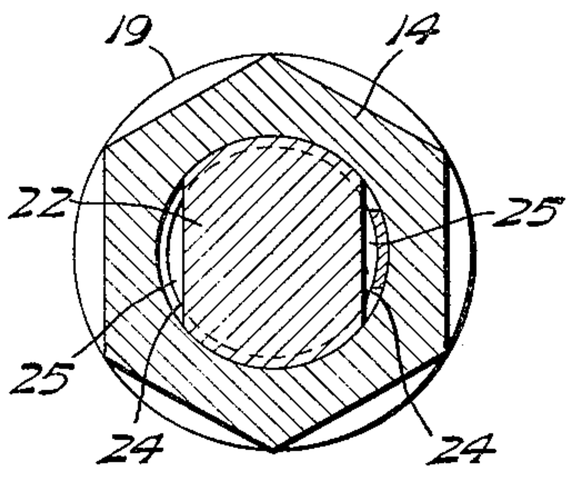


Fig. 3.

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Patented Jan. 23, 1951 2,538,905

UNITED STATES PATENT OFFICE

2,538,905

FLUSHABLE NOZZLE

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Application March 1, 1947, Serial No. 731,773

2 Claims. (Cl. 299—59)

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This invention relates to a windshield clearing system and more particularly to an apparatus for washing the windshield clean of vision obscuring matter whereby to maintain a clear field of vision through the shield. An arrangement of this general class is now in use on the modern car, the same employing a small nozzle with a fine orifice through which the washing liquid is discharged onto the windshield. In practice this discharge orifice is quite small and therefore it will sometimes become clogged by impurities in the water as supplied by service station attendants.

The object of the present invention is to provide an arrangement of this character by which flow obscuring impurities may be readily flushed from the system. Again, the invention has for its object to provide a discharge unit of simple and economical design which will facilitate the mass production of the same.

The foregoing and other objects will manifest themselves as the following description progresses, reference being had to the accompanying drawing, wherein

Fig. 1 is a schematic view illustrating a window washing system embodying the present invention;

Fig. 2 is a fragmentary and greatly enlarged view showing the discharge unit partily in section; and

Fig. 3 is a transverse section taken on line 3—3 of Fig. 2.

Referring more particularly to the drawing, the numeral 1 designates the windshield over which a wiper 2 is oscillated with an arm 3 by means of a shaft journaled in a cowl supported housing 4. These parts are of well-known construction since they form a part of the standard equipment of the modern automobile.

The shaft housing 4 is provided with a liquid discharging unit 5 which in turn is connected by a conduit 6 to a pump 7. The pump may be of any approved form, such as that shown in the earlier Patent No. 2,142,056, and therefore may comprise a diaphragm 8 normally held at the end of its discharging stroke by a spring 9. A pump is mounted on a liquid reservoir 10 and has its diaphragm chamber connected by a conduit 11 to the intake manifold 12, or some other suitable source of negative pressure. A control valve 13 arranged in the conduit 11 is operable to connect the pump to its source of vacuum so as to actuate the liquid displacing member 8 against the action of spring 9 for intaking a charge of liquid from the reservoir 10. Upon release of

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the valve 13 the diaphragm chamber containing the spring 9 will be vented to the atmosphere so that the spring may move the diaphragm on its liquid expelling stroke for ejecting the charge of liquid through the conduit 6 to the discharge unit 5.

The discharge unit is illustrated as being in the form of a nozzle having a body 14 threaded into the shaft housing 4, the latter being formed with a passage 6' extending between the throat 15 of the nozzle body and the conduit 6. The throat 15 opens into a chamber 16 from which the liquid will pass into a counterbored chamber 17 and out through an orifice 18 which is positioned to direct a spray upwardly onto the windshield. The chamber 16 is internally threaded to receive a flushing valve 19. This valve is arranged to seat upon the rim 20 in which the orifice 18 is cut so that when the valve is opened the orifice 18 will likewise be opened through the rim. A sealing gasket 21 may be interposed between the valve 19 and its seat as provided by the rim 20. The valve is formed with an anchoring stem or shank 22 externally threaded to adjustably engage the internal thread 23 in the chamber 16. The stem is straddle-milled to provide opposite flat faces 24 which serve, with the encircling chamber wall, to define fluid passages 25 as a means of communication between the inner end of the chamber 16 and the counterbored chamber 17. By reason of the position of the mounting shank in the nozzle body, this counterbored chamber is made ring shaped and therefore the jet orifice 18 will have free communication about the shank and through the parallel passages 25 with the chamber 16.

In actual practice the entire length of the nozzle is approximately one-half of an inch and the diameter is about one-fourth of an inch. It is therefore obvious that the discharge orifice will be quite minute in order to conserve the supply of liquid and to insure the issuing jet carrying upwardly into the path of the wiper 2, as indicated in Fig. 1. Consequently, the orifice may readily clog by impurities in the liquid. However with the present invention the valve may be adjusted to a given or set position off from its seat so that the liquid will flow in larger volume over the rim 20 and thereby carry out any passage-obstructing matter. For this purpose the periphery of the valve body may be knurled, as shown at 26. It will be understood that this flushing action will be of limited duration since the pump diaphragm 8 will expel the predetermined volume of liquid under a predetermined pressure. There-

after the valve will be reset for the subsequent functioning of the system.

The invention is of simple construction and the parts are economically manufactured and assembled. In practice it has been found to be efficient and practical, and while the foregoing description has been given in detail for ease of understanding it will become apparent that the inventive principles involved are capable of assuming other embodiments without departing from the spirit of the invention and the scope of the appended claims.

What is claimed is:

1. A nozzle comprising a tubular internally threaded body having a laterally spaced annular chamber at its outer end, the lateral wall of the chamber being defined by a rim, a flushing valve normally seating on said rim to close the chamber therethrough and having a reduced mounting shank, said mounting shank being spaced inwardly of the rim and defining the inner wall of the annular chamber and including a threaded portion for engagement with the internally threaded portion of said body to permit unseating of the valve from the rim, the latter being formed with a recess interrupting its surface and overhung by the seated valve to define with the valve a lateral discharge orifice, said shank having a flat face at one side for establishing communication through the body to the chamber, and said

chamber with the shank defining an annular passage establishing communication between the flat face and the discharge orifice.

2. The structure of claim 1 characterized in that a sealing gasket is interposed between the valve and rim, and one face of the sealing gasket defines the outer wall of the channel.

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