

March 13, 1934.

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1,950,796

CLEANING NOZZLE

Filed April 3, 1933

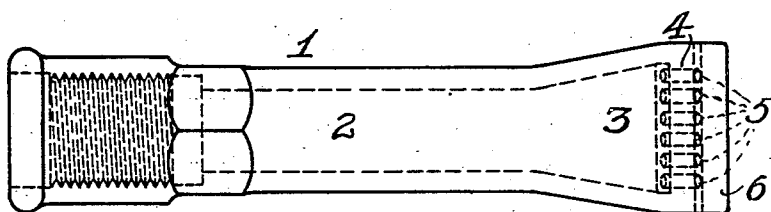


Fig. 1.

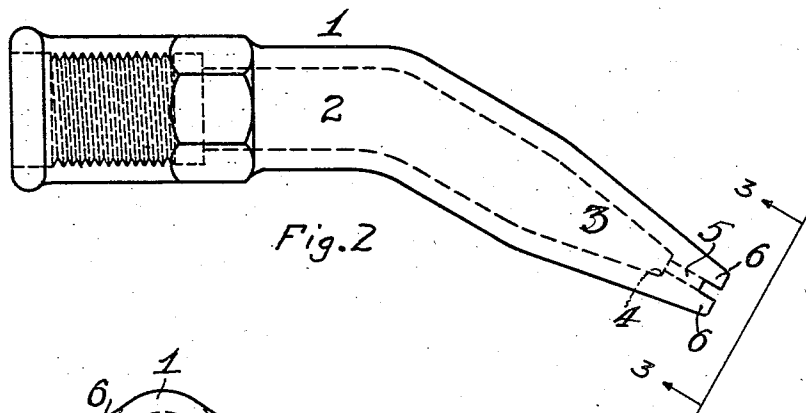


Fig. 2

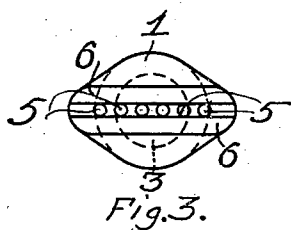


Fig. 3.

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UNITED STATES PATENT OFFICE

1,950,796

CLEANING NOZZLE

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Application April 3, 1933, Serial No. 664,110

1 Claim. (Cl. 299—141)

This invention relates to a nozzle through means of which to deliver, against a surface to be cleaned, a flat stream of cleaning fluid in a form which will be effective both in physically dislodging the foreign matter to be removed from the surface and imposing upon the said material the detergent effect of the flat stream.

The purpose of the invention is to impart to the cleansing liquid a sectional form which, while sufficiently flat to cut under the deposit of foreign matter, will maintain such solidity of volume and such restriction against attenuation, foaming or the like as will insure more concentrated and accurate response to the directing of the stream by voluntary manipulation and consequently more prompt and efficient cleansing.

The invention proceeds upon the principle of distorting the discharge end of a spreading nozzle in such manner that the bore of the nozzle, usually cylindrical, will gradually merge with a transversely shaped cavity which increases the dimension of the delivered volume of fluid in one direction transversely and reduces its dimension in a direction perpendicular to the increased dimension and thereby lends to the escaping stream the shape of a flat ribbon of substantial thickness and without undue spreading in the said direction of greater dimension or dispersion of the fluid with consequent loss of its definition at the confines of the ribbon.

An important feature of the invention resides in means whereby the expansive forces and their undue spreading effect, which are usually incident to the escape of a body of liquid through a constricted outlet, are eliminated in the functioning of the present nozzle through means of a transverse wall at the delivery end of the transversely shaped cavity, past which wall the liquid is permitted to escape through means of a plurality of bores parallel with the axis of discharge, of sufficient number to subdivide the escaping stream; also a pair of constricting lips extending beyond the said transverse wall parallel with the axis of discharge, spaced apart in the direction of the minor dimension of the shaping cavity and between which the escape ports of the wall deliver; the space between these confining lips being substantially the same as the diameter of the escape openings or discharge ports of the wall so as to continue the constriction of the stream in the direction of its thickness but without special limitation or constriction in the direction of the major dimension.

In the preferred embodiment of the invention, in addition to being of a diameter corresponding

to the spacing of the constricting lip, the discharge ports are spaced apart or have the walls which intervene between them in the direction of the major stream dimension, of substantially the same dimension as the diameter of the said ports.

In the accompanying drawing, in which the preferred embodiment of the invention is shown by way of illustration—

Figure 1 is a plan view; Figure 2 a side elevation; and Figure 3 an end view of the nozzle, the relative internal dimensions and confines of the bore, transversely shaped and discharge ports being shown in dotted lines.

1 represents a barrel having a cylindrical bore 2 and a transversely shaped cavity 3, the said cavity being shaped by distorting the bore 2 to an increased dimension in one direction transverse to the axis of the barrel, and constricting the said bore in the transverse dimension perpendicular to the said increased dimension, with the result that the said transversely shaped cavity will have the form shown by dotted lines in Figures 1 and 2. Extending across the discharge end of the cavity 3 is a wall 4 provided with a plurality of bores or discharge ports 5, which ports extend perpendicularly to the wall and parallel with the axis of stream delivery. Beyond the said wall 4, and extending parallel with the axis of stream delivery, are a pair of constricting lips 6 spaced apart a distance substantially identical with the diameter of the bores 5 and receiving the discharge of said bores between them. By this arrangement of subdivided escape for the cleansing fluid, parallelism with the axis of stream delivery and with each of the ports through which escape is permitted, and the spacing of the parallel constricting lips 6 in correspondence with the diameters of the discharge ports, a ribbon discharge is produced which, by reason of its substantial thickness but generally flat form, proves very effective in dislodging the foreign material upon a surface to be cleaned.

In the preferred embodiment, six ports 5 are preferably employed in defining the degree of subdivision of the escaping fluid volume; and the walls which separate these discharge ports, and which are arranged in series with them in the direction of the major dimension of the stream-shaping cavity, are preferably of substantially the same dimension as the bores.

What is claimed is:

A spreading nozzle for delivering liquid against a surface to be cleansed, said nozzle comprising a barrel having a bore and a delivery end having a

transversely shaped cavity in axial continuation of said bore and into which said bore merges; said cavity being of materially less dimension than the bore in one direction transverse to the axis of the nozzle and of a materially greater dimension than the said bore in a direction perpendicular to the said lesser dimension; said cavity having an end wall in a plane perpendicular to the axis of the nozzle, constructed with a series of jet openings extending therethrough parallel with the axis of discharge; and said nozzle having beyond the said wall a pair of stream-restricting lips extending parallel with the axis of delivery, spaced apart a distance corresponding substantially with the transverse dimension of the jet openings and continuing the constriction of the delivered stream in the direction of the minor dimension of the shaping cavity.

FRANK M. HILGERINK. 85

15	90
20	95
25	100
30	105
35	110
40	115
45	120
50	125
55	130
60	135
65	140
70	145
75	150