

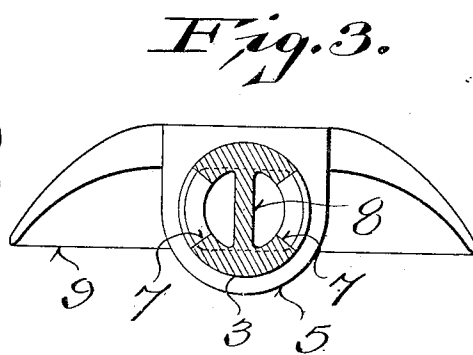
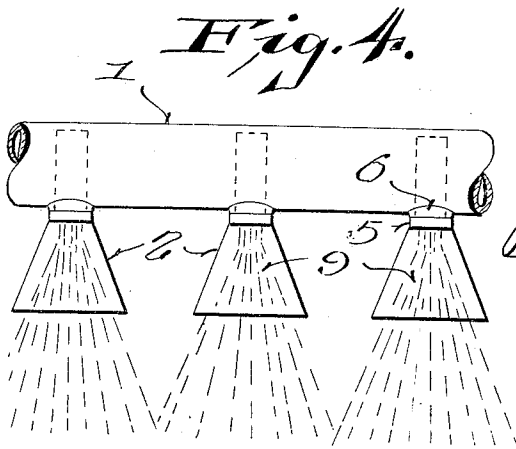
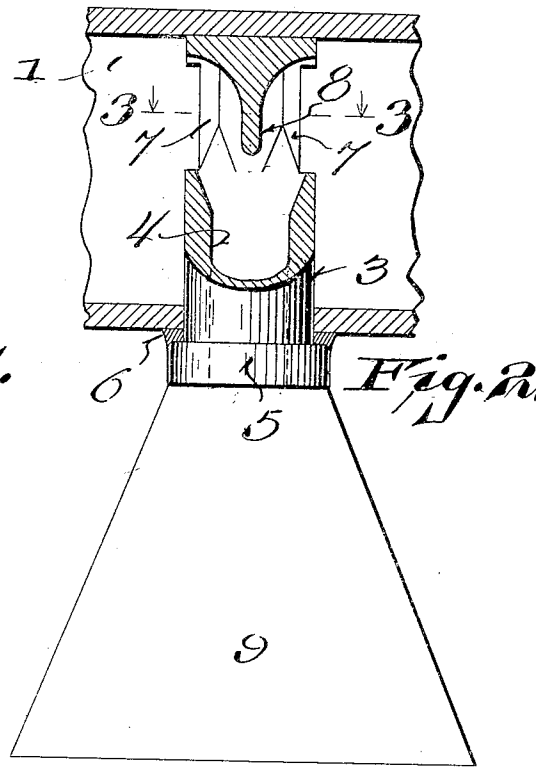
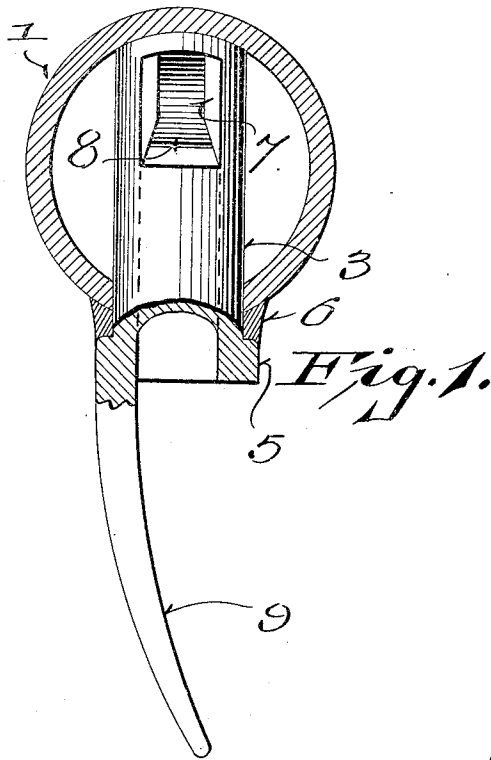
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E. E. DEISTER

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SPRAY NOZZLE

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UNITED STATES PATENT OFFICE

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SPRAY NOZZLE

Application filed February 24, 1931. Serial No. 517,731.

This invention pertains to nozzles, and more particularly to a nozzle designed to provide a flat fan-shaped spray.

While the present invention has numerous applications, such as spraying water, fuel oil, bituminous road dressing, and other liquids, the same is designed primarily for use in washing screened material in various mining and allied operations, where the greatest efficiency is obtained through a spray of maximum force and width. Obviously, this is best accomplished by a flat unrestricted fan-shaped spray.

Therefore, the present invention has primarily for its object to provide an extremely simple, inexpensive, and efficient nozzle for the foregoing purpose, in which an even fan-shaped spray is obtained without restricting the flow of liquid, thus providing maximum force and eliminating possibility of clogging of the nozzle, so prevalent in restricted types of nozzles.

Incidental to the foregoing, a more specific object of the invention resides in the provision of a nozzle of the foregoing character for multiple assembly in a common header or supply pipe, and which is so constructed as to deflect a proper proportion of a transverse flow of liquid through the nozzle with minimum obstruction of flow to the adjacent nozzles.

A still further object resides in the peculiar and novel construction of the nozzle inlet, whereby a transverse flow of liquid is collected and deflected through the nozzle with minimum retarding of the velocity of flow.

A more specific object of the present invention is the provision of a nozzle provided with an arcuate fan-shaped lip adjacent its discharge opening, and transverse inlets aligned with a central web having opposed arcuate faces aligned with the inlets to deflect the flow of liquid through the nozzle from either side, thus eliminating the necessity of providing individual nozzles for right and left hand flow.

With the above and other objects in view, which will appear as the description proceeds, the invention resides in the novel construction, combination and arrangement of parts

substantially as hereinafter described and more particularly defined by the appended claims, it being understood that such changes in the precise embodiment of the herein disclosed invention may be made as come within the scope of the claims.

In the accompanying drawings is illustrated one complete example of the physical embodiment of the present invention constructed according to the best mode so far devised for the practical application of the principles thereof.

In the drawings, Figure 1 is a transverse view through a header provided with a nozzle constructed in accordance with the present invention, parts of the nozzle being broken away and in section;

Figure 2 is a longitudinal section with parts of the nozzle cut away;

Figure 3 is a detailed section of the nozzle taken on the line 3—3 of Figure 2; and

Figure 4 is an elevation of a header with a plurality of nozzles assembled therein.

Referring now more particularly to the accompanying drawings, the numeral 1 designates an ordinary header, such as is used with a plurality of nozzles when it is desired to obtain an unbroken spray sheet of substantial width. In such instance, the nozzles 2 are secured to the header at suitable spaced intervals depending upon the width of spray delivered by each nozzle and the distance of the surface to be sprayed from the nozzles.

Each nozzle 2 comprises a tubular shank 3 provided with an unrestricted central passage 4, the shank being closed at its inner end and provided with a flanged head 5 at its outer or discharge end.

While various means may be employed for securing the nozzle to the header, in the present instance it is proposed to accomplish this by inserting the shank through an opening in one side of the header and then welding the head 5 to the header, as shown at 6.

As best shown in Figure 1, the inner closed end of the shank 3 is formed upon an arc conforming to the inner diameter of the header 1, and abutted against the same in assembled position. Adjacent its inner end, the shank 3 is provided with opposed inlets

7, the sides of which are radial to provide a maximum opening for collecting and directing the flow of liquid through the header into the nozzle shank. Adjacent the lower edges of the inlets 7, the inner bore of the shank 3 is bevelled outwardly, in order to eliminate sharp shoulders to restrict the flow of liquid into the shank.

Projecting from the closed end of the shank, and positioned centrally of the inner bore in alignment with the opposed inlets 7, is a web 8, the opposed faces of which are curved outwardly toward the upper edges of the inlets.

Either formed integral with the head 5, or secured thereto in any suitable manner, is an arcuate flared lip 9 which serves to engage the stream discharged from the nozzle and spread the same in an even flat fan-shaped sheet, it being understood that the degree of spread of the stream is governed by the radius of the curved face of the lip 9, which in turn is determined by the volume and pressure of liquid to be discharged. Obviously, the smaller the radius of the lip, the greater the spread of the stream.

From the foregoing explanation taken in connection with the accompanying drawing, it is thought that the operation and advantages of the present invention will be quite apparent, in that a certain proportion of the flow of liquid through the header will enter the transverse inlet 7, facing the flow, and is then deflected at right angles through the unrestricted passage 4 in the shank 3, from which it is discharged against the arcuate surface of the lip 9 and spread into a flat fan-shaped sheet, as indicated in Figure 4. Obviously, only a portion of the flow is directed through each nozzle, the remainder passing around the shank to the adjacent nozzle, and that portion which is collected by each nozzle is deflected by the curved face of the central web 8, with minimum obstruction to the flow and therefore not materially affecting the velocity of flow.

It will also be appreciated that a minimum obstruction is provided to the flow passing through the nozzle, thus avoiding possibility of clogging as well as insuring maximum force of discharge.

In addition to the foregoing, an important feature of the present invention resides in the fact that the novel construction of the present nozzle, wherein opposed inlets are provided, enables the header 1 to be supplied from either end and does away with the necessity of providing individual nozzles for right and left hand flow.

While the present invention has been specifically illustrated and described, it is to be understood that slight variations are contemplated as coming within the scope of the invention.

I claim:

1. A spray nozzle having a straight tubular shank for insertion into a header, said shank being closed at one end and provided with opposed inlets, a central transverse web aligned with said openings for deflecting a flow of liquid from the inlets through the shank, and a flared lip carried by the shank adjacent its discharge end to deflect a stream of liquid into a flat fan-shaped sheet.

2. A spray nozzle having a straight tubular shank for insertion into a header, said shank being closed at one end and provided with opposed transverse inlets, a central web disposed in said shank in alignment with said inlets and having opposed curved faces for directing flow of liquid from said inlets to said shank, and a flared lip secured to said shank adjacent its discharge end to deflect the stream of liquid into a flat fan-shaped sheet.

3. A spray nozzle having a straight tubular shank for insertion into a header, said shank being closed at one end and provided with opposed transverse inlets, a central web disposed in said shank in alignment with said inlets and having opposed curved faces for deflecting flow of liquid from said inlets to said shank, and an arcuate flared lip carried by the shank adjacent its discharge end for engagement with the stream of liquid to deflect the same into a flat fan-shaped sheet.

4. A spray nozzle having a straight tubular shank for insertion into a header, said shank being closed at one end and provided with a head adjacent its opposite end and with opposed inlets adjacent its closed end, a central transverse web depending from the closed end of said shank and provided with opposed curved faces for directing flow of liquid from said inlets through said shank, and an arcuate flared lip secured to said shank adjacent its discharge end for deflecting the discharged stream of liquid into a flat fan-shaped sheet.

5. A liquid supply header and a plurality of spaced spray nozzles therefor, each nozzle comprising an unobstructed shank positioned transversely in said header and closed at one end and provided with opposed transverse inlets positioned longitudinally of the header, a central web disposed in said shank and aligned with said inlets for deflecting the flow of liquid from said inlets through said shank, and a flared lip carried by the shank adjacent its discharge end for engagement with the stream of liquid to deflect the same into a flat fan-shaped sheet.

In testimony that I claim the foregoing I have herenuto set my hand at Fort Wayne, in the county of Allen and State of Indiana.

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