This application is a continuation in part of our copending application Serial No. 651,934, filed April 10, 1957, and later abandoned. The invention relates to nozzles designed to be mounted on spray pipes for installation especially in places where available space is restricted. For example, in paper-making machines there are places where it is necessary or desirable to wash parts of the machine, such as rolls, wires, felts, screens, constantly to avoid any accumulation of fibres which might create defects in the pulp sheet which is being made into paper. It is also desirable that such nozzles be easily cleanable without moving them from their places. According to the invention, a nozzle is provided that is designed to be mounted in the side of a spray pipe so that most of the nozzle is within the pipe and very little protrudes outside. The nozzle embodying the invention is of simple construction, is easily assembled, and is easily cleaned by shutting off temporarily the water or other fluid supplied to it.

For a more complete understanding of the invention reference may be had to the following description thereof, and to the drawing, of which:

Figure 1 is a sectional view of a spray pipe and a nozzle mounted therein, the section of the nozzle being taken from the line 1—1 of Figure 5;

Figure 2 is a section of the nozzle shown in Figure 1, the movable parts being in a different position of operation;

Figure 3 is a perspective view of a seat member in the nozzle;

Figure 4 is a perspective view of a spring part of the nozzle;

Figure 5 is a plan view of the nozzle; and

Figure 6 is a fragmentary sectional view of the nozzle casing or body.

A spray nozzle embodying the invention is shown in Figure 1 mounted to project through the wall of a spray pipe 10. The nozzle comprises a body 12 which is cylindrical and is externally threaded as at 14. This body has a central cylindrical bore 16 in which is slidably fitted a tubular cylinder 20.

The body 12 has a semi-cylindrical extension 22 which rounds off into a dome 24 extending across the outer end of the body 12 and spaced therefrom by a slot 26 which extends to the axis of the body 12. A seat member 30 is secured in or is integral with the dome 24. This member is an obstruction opposite the outer end of the bore 16 to deflect the stream of water flowing through the bore and cooperates with the tubular cylinder 20 to form a spray of the fluid flowing therethrough when the member 20 is seated against it. The face of the seat member 30 opposed to the bore 16 is given any desired contour according to the type of spray to be emitted from the nozzle. By way of example, this face is shown as being conical for the most part as at 32, the cone being modified by a shallow concave gouge 34 facing the slot 26.

The tubular cylinder 20 has a central bore 40 which serves as a passage for water leading from the pipe 10 through the spray nozzle. The cylinder 20 has a neck of reduced diameter 42 near the inner end thereof, forming a shoulder 44. An annular washer 46 of rubber or equivalent material surrounds the neck 42 and bears on the shoulder 44. The outer edge or rim of the washer 46 rests on the inner end face 47 of the body member 12 which face is countersunk so that it slopes conically toward the axis of the body member and is surrounded by a rim 48. This rim has turned flanges 49, 49' along portions thereof. A flat spring 50 which is preferably H-shaped and of resilient material such as spring metal or a plastic is mounted upon the washer 46 and straddles the neck 42, engaging under a head 52 on the neck. The spring 50 has four legs, 54, 56, 58, 60, which make it more flexible and which engage under the flanges 49, 49' as indicated in Figure 5 so that the spring resiliently supports the tubular member 20 in the position illustrated in Figure 1. The member 20 is of such a length that when supported in the position shown in Figure 1, its lower end is spaced from the seat member 30 sufficiently to permit a voluminous flow of water through its bore. When there is a normal pressure in the spray pipe 10, the pressure on the spring 50 and washer 46 moves the member 20 to the position shown in Figure 2 in which the lower end of the member 20 engages the conical surface 32 except where it is relieved by the gouge 34. The thin opening provided by the gouge permits a spray from the water flowing through the bore of the tubular member. 20. Whenever the nozzle tends to become clogged with fibers or other solids, a temporary reduction of the pressure in the pipe 10 sufficient to permit the spring 50 to retract the tubular member 20 to the position shown in Figure 1 will provide free flow of water past the seat member 30 to wash the obstructing material away. If, as is usual practice, the spray pipe has a row of several nozzles mounted therein, the temporary reduction of pressure will result in a washing of all of the nozzles simultaneously.

Various modifications and changes may be made in the details of construction of the nozzle herein described without departing from the scope of the invention defined in the following claims.

We claim:

1. A spray nozzle comprising a cylindrical body with a central bore countersunk at one end thereof and an obstruction opposite the other end thereof, said body having a tubular cylinder loosely fitted within said bore and adapted to engage said obstruction to form a spray vent, said tubular cylinder having a portion of reduced diameter at the end thereof remote from said obstruction, said reduced portion terminating in a head of slightly larger diameter, a flat flexible washer surrounding said reduced portion and fitted in said countersunk end of the bore, and a leaf spring overlying said washer and extending the full width thereof, said spring engaging under said head to hold said washer in place.

2. A spray nozzle as described in claim 1, said body having spaced intumescence flanges along portions of its countersunk end, said leaf spring having end portions engaging under said flanges.

3. A spray nozzle comprising a cylindrical body with a central bore countersunk at one end thereof and an obstruction opposite the other end thereof, said body having a tubular cylinder loosely fitted within said bore and adapted to engage said obstruction to form a spray vent, said tubular cylinder having a portion of reduced diameter at the end thereof remote from said obstruction, said reduced portion terminating in a head of slightly larger diameter, a flat flexible washer surrounding said reduced portion and fitted in said countersunk end of the bore, and a leaf spring overlying said washer and extending the full width thereof, said spring engaging under said head to hold said washer in place.
the full width thereof, said spring engaging under said head to hold said washer in place and having a recess extending in from an end thereof to receive said reduced portion of the tubular cylinder with edge portions of said spring along said recess engaging under said head.

4. A spray nozzle as described in claim 3, said body having inturmed flanges along spaced portions of its countersunk end, said leaf spring having end portions engaging under said flanges.

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