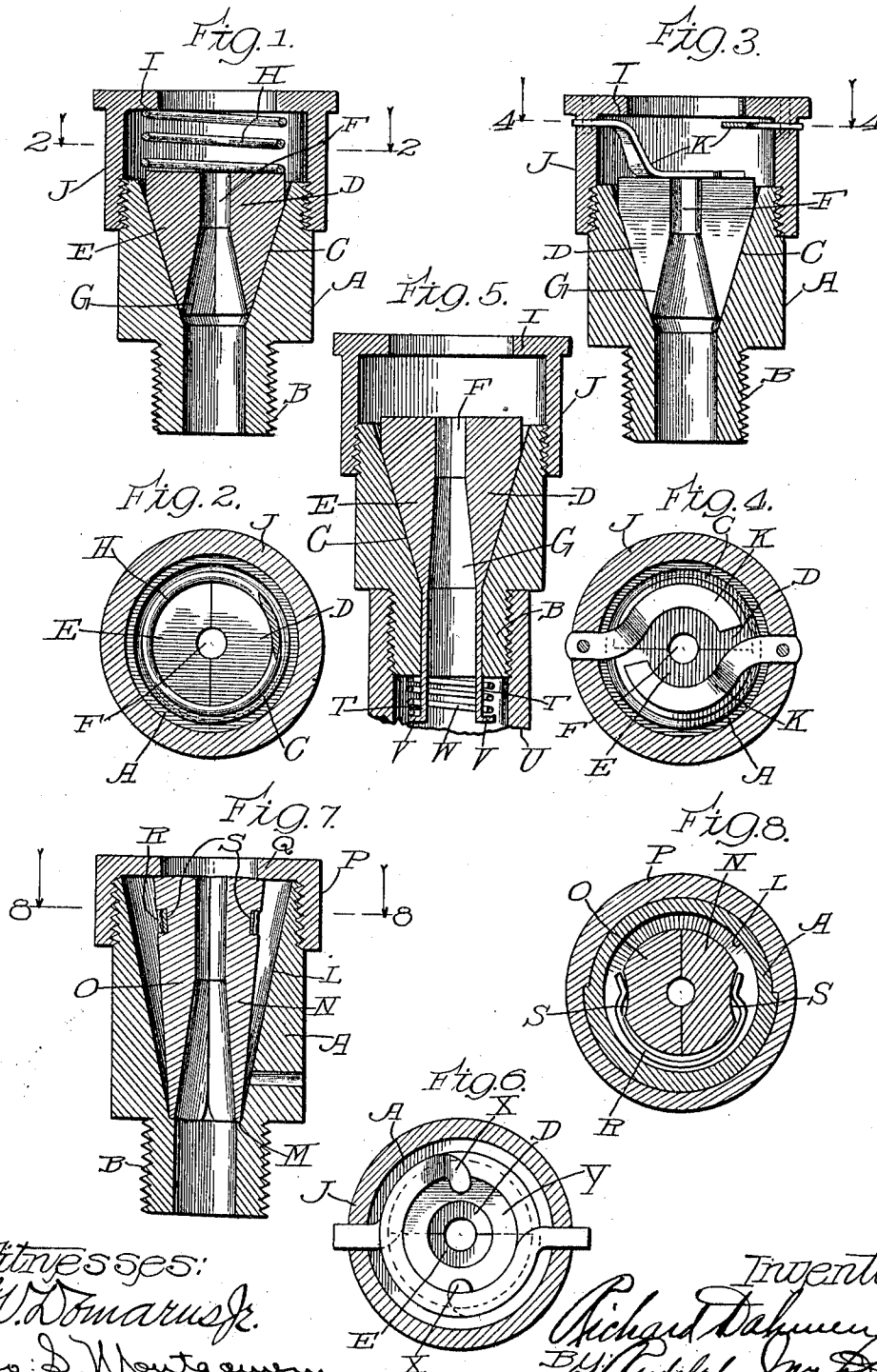


R. DAHMEN.
SELF CLEANING NOZZLE.
APPLICATION FILED APR. 28, 1911.

1,040,899.

Patented Oct. 8, 1912.



Witnesses:
W. D. Marusik.
Geo. D. Montgomery

Inventor:
Richard Dahmen
By: Rudolph H. H. H. H.

UNITED STATES PATENT OFFICE.

RICHARD DAHMEN, OF CHICAGO, ILLINOIS.

SELF-CLEANING NOZZLE.

1,040,899.

Specification of Letters Patent.

Patented Oct. 8, 1912.

Application filed April 28, 1911. Serial No. 623,936.

To all whom it may concern:

Be it known that I, RICHARD DAHMEN, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Self-Cleaning Nozzles; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention has for its object to provide a self-cleaning discharge nozzle for water jets for bottle washing and similar machinery and which may be adapted to machinery and devices for other purposes. The invention consists in the features of construction and combinations of parts hereinafter fully described and claimed.

In the accompanying drawings illustrating the invention: Figure —1— is a central vertical longitudinal section of a nozzle embodying my invention. Fig. —2— is a horizontal section of the same on the line 2—2 of Fig. —1—. Fig. —3— is a section similar to Fig. —1— showing a modified form of construction. Fig. —4— is a section similar to Fig. —2— on the line 4—4 of Fig. —3—. Fig. —5— is a view similar to Fig. —1— showing the means for mounting a compression spring within the liquid supply pipe for normally maintaining the separable members of the nozzle in normal position. Fig. —6— is a view similar to Fig. —4— showing another form of spring which may be employed to hold the separable members in normal position. Fig. —7— is a central vertical longitudinal section of another modified form of construction of nozzle. Fig. —8— is a plan section of the same on the line 6—6 of Fig. —5—.

In bottle washing machines and the like it very frequently happens that solids are carried by the water and become lodged in the delivery ends of the nozzles thus interrupting the flow of water through said nozzles. It is customary when a nozzle becomes clogged to manually dislodge the obstruction when discovered. This necessarily causes a loss of time and interferes with the

efficiency of the machine equipped with the nozzle.

My invention has for its object to provide a delivery nozzle for this class of machines, but which is also adapted for other purposes, as for example, delivery or discharge nozzles of sprinkler systems and the like, which will automatically discharge obstructions becoming lodged therein.

My invention may be embodied in a number of different forms of construction all of which, however, involve a common principle.

In the accompanying drawings I have shown several preferred forms of embodiment of the invention which I will now proceed to describe.

Referring to Figs. —1— and —2— A indicates the housing of a nozzle which is equipped with an externally threaded stem B adapted to be connected with the delivery pipe for water or other liquid under pressure. The said housing A is provided with a flaring or tapered mouth C in which two separable members D and E are mounted, the latter when fitted together forming an inverted truncated cone through which a central opening F is provided which is flared at its receiving end G. The said members D and E are adapted to fit the tapered mouth C of the housing A and are held in contact with each other by engagement of their circumferential faces with the wall of said flaring mouth C as will be obvious. A helical spring H bearing at one end upon the larger ends of said members D and E and against the annular flange I of a cap J mounted upon the externally threaded end portion of the housing A serves to hold said members D and E within said flaring mouth C against the action of the liquid under pressure issuing from the stem B of said housing. The mouth of the flaring portion G of the central opening through said members D—E corresponds substantially in diameter with the opening through the stem B so that any solid of greater diameter than the opening in the stem B will become lodged in the flaring portion G of said opening thereby preventing passage of said solid. The liquid is delivered from said nozzle un-

der relatively high pressure varying from ten to twenty-five or thirty pounds and upon an obstruction becoming lodged in said opening F—G the fluid pressure exerted upon said obstruction and upon the contiguous lower end portion of the members D and E will serve to raise said members against the action of said spring H and at the same time exert a separating force upon the same. Thus the portion F of said opening in said members D and E will gradually enlarge as said members are raised and separated until they are sufficiently separated to permit the obstruction to be discharged therebetween. Such discharge of the obstruction will obviously reduce the pressure area acted upon by the liquid and decrease the pressure exerted upon said members D and E in the direction of flow of the liquid to a point less than the pressure exerted by said spring H whereupon the latter will force said members D and E back to the position shown in Fig. —1— against the action of the pressure exerted on said members by the liquid.

The degree of pressure exerted by the spring H will be adjusted in accordance with the varying degrees of pressure of the liquid discharged from the nozzle and where the nozzle is disposed in the position shown in Fig. —1— the said members D and E will, under conditions of lower pressure, return to their normal positions by gravity without the aid of a spring. However, nozzles of this character may be inverted and under these conditions it will be obvious that the use of a spring will be imperative. Owing to the fact that said nozzles are relatively very small considerable difficulty may be experienced in providing a suitable spring for maintaining the members D and E in their normal positions in the flaring mouth of the housing. Springs of various shapes may, therefore, be employed and in Figs. —3— and —4— I have shown another form of spring adapted to the purpose, the same consisting of flat springs K each secured at one end to the cap J at diametrically opposite points and provided with curved free end portions, one of each of which is adapted to bear upon one of the members D and E respectively. Other means for exerting a yielding retaining pressure on said members D and E for holding the same within said flaring mouth of said member A may be provided, the foregoing being merely shown and described as examples of such means.

Other forms of springs may also be provided, as shown in Figs. —5— and —6— respectively. In Fig. —5— the separable members are shown as being provided with very thin flat projections T which project through the stem B of the housing and into the feed pipe U; said projections being pro-

vided at their lower ends with lugs V between which and the lower end of the stem B a helical compression spring W is interposed. As said members D and E move upwardly and separate the said projections T act in the manner of thin flat springs and will yield to the separating pressure exerted upon said members D and E in an obvious manner.

In the construction shown in Fig. —6— flat springs somewhat similar to those shown in Figs. —3— and —4— are employed; said springs being rendered helical at their free end portions and being of greater length than the springs K, each thereof extending through an arc of about 270 degrees and passing each other between their ends. At their inner ends the said springs X are preferably secured to a washer Y which rests upon the upper ends of said members D and E.

In the construction shown in Figs. —7— and —8— the housing A is provided with a flaring mouth L which is also tapered but in less degree than the flaring mouth C, shown in Figs. —1— and —3—, and in the lower end of said flaring mouth L an annular shoulder M is provided upon which the members N and O of the truncated cone are adapted to rest. The cap P is provided with an annular flange Q against which the upper ends of said members N and O normally bear. The said members N and O when contracted are of less diameter at their upper or larger ends than the upper end portion of said flaring mouth L so that said members N and O may turn on the shoulder M as a fulcrum during separation thereof for the purpose of permitting an obstruction to be discharged. The said members N and O are normally held in contracted position by means, for example, of a flat spring R engaging one of said members at each of its ends, the latter being preferably provided with recesses S adapted to receive the respective ends of said flat spring. It will be noted that in the constructions shown in Figs. —5— and —6— the members of the delivery spout N—O of the nozzle separate without moving longitudinally but that the principle of operation of the same is identical with the operation of the constructions shown in Figs. —1— to —4— inclusive.

The drawings are intended to show only such an embodiment of the invention without regard to fine details of construction as will clearly illustrate the general principle of operation, such changes in construction being contemplated as may be found necessary or desirable to insure uniform movement of the separable members of the delivery spout of the nozzle to and from normal position.

I claim as my invention:

1. A self-cleaning nozzle comprising a

plurality of laterally separable members constituting the walls of a passage for fluid under pressure, said passage annularly enlarged and flared at its inlet end, and means yieldingly holding said members against separation by the pressure exerted thereon by the fluid flowing through said passage.

2. A nozzle comprising a plurality of laterally separable members constituting the walls of a passage for fluid under pressure, the latter annularly enlarged and tapered at its inlet end, a holder for said members, and means within said holder for yieldingly restraining separation of said members by the fluid pressure acting thereon and permitting separation thereof upon an increase in fluid pressure acting thereon due to lodgment of an obstruction in said passage, whereby the discharge end of the latter is automatically enlarged to permit said obstruction to pass.

3. A self-cleaning nozzle comprising a housing having a flaring mouth at its delivery end, and laterally separable members having a discharge opening therebetween contracted at its delivery end disposed in said flaring mouth and adapted to be moved longitudinally of said flaring mouth by fluid pressure and separate therein to permit the passage of obstructions.

4. A self-cleaning nozzle for liquid under pressure comprising a discharge spout consisting of a plurality of laterally separable members between which a passage for liquid is formed, the said passage enlarged at its inlet end, and means normally holding said members against separation by the pressure of the liquid thereon, said members adapted to be separated to expand the discharge end of the passage therebetween by increase in the fluid pressure thereon due to the lodgment of an obstruction in said passage, substantially as and for the purpose specified.

5. A self-cleaning nozzle for fluid under pressure comprising a plurality of laterally separable members made of unyielding material constituting the walls of a passage for the fluid, a carrying member for said separable members, said carrying member normally maintaining said members in contact with each other, said separable members being movable relatively to each other and to the carrying member by fluid pressure acting thereon in one direction.

6. A self-cleaning nozzle comprising a member provided with a passage having a flaring mouth portion and adapted to be connected with a source of supply of fluid under pressure, a plurality of laterally separable members having inclined outer faces and constituting the walls of a passage for fluid disposed within the said flaring mouth portion of said first-named member, said separable members longitudinally movable by fluid pressure acting thereon in said flaring

mouth and adapted to be held thereby in engagement with each other when disposed at one limit of their movement relatively to said first-named member and adapted to separate as they approach the other limit of their movement relatively thereto.

7. A self-cleaning nozzle comprising in combination a plurality of laterally separable members constituting the walls of a passage for fluid under pressure, a member engaged therewith, coacting inclined guiding means on said separable members and said last-named member, said separable members freely longitudinally movable relatively to said last-named member and held by the latter against separation when disposed at one limit of their movement relatively thereto, said members adapted to be moved by fluid pressure relatively to said member and each other to automatically permit obstructions to pass through the passage bordered thereby.

8. A self-cleaning nozzle for liquid under pressure comprising a discharge spout consisting of a plurality of separable members between which a passage for liquid is formed, the said passage enlarged at its inlet end, a housing having a flaring mouth adapted to receive said members, and a spring disposed to resist separation of said members by the fluid pressure exerted thereon, said members adapted to be separated against the action of said spring to expand the discharge end of the passage therebetween by increase in the fluid pressure thereon due to the lodgment of an obstruction in said passage, substantially as and for the purpose specified.

9. A self-cleaning nozzle comprising a member having a flaring discharge end, a plurality of separable members having peripheral walls formed to fit said flaring mouth, there being a passage between said members contracted at its delivery end, said flaring mouth normally preventing separation of said members by lateral pressure exerted thereon by the flow through said passage, and a cap for said member having a flange disposed in the path of said separable members, the latter adapted to be projected from said mouth and separated when said passage becomes obstructed to enlarge said passage and discharge said obstruction.

10. A self-cleaning nozzle comprising a member having a flaring discharge end, a plurality of separable members having peripheral walls formed to fit said flaring mouth, there being a passage between said members contracted at its delivery end, said flaring mouth normally preventing separation of said members by lateral pressure exerted thereon by the flow through said passage, a cap for said member having a flange disposed in the path of said separable members, the latter adapted to be projected from said mouth and separated when said passage

becomes obstructed to enlarge said passage
and discharge said obstruction, and a spring
for returning said members to their normal
positions after discharge of said obstruction
5 against the action of the fluid pressure ex-
erted thereon.

In testimony whereof I have signed my

name in presence of two subscribing wit-
nesses.

RICHARD DAHMEN.

Witnesses:

RUDOLPH WM. LOTZ,
M. M. BOYLE.

**Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents,
Washington, D. C."**
