No. 894,059. PATENTED JULY 21, 1908.

J. ROSBOROUGH.

NOZZLE.

APPLICATION FILED APR. 13, 1908.

Fig. IV.

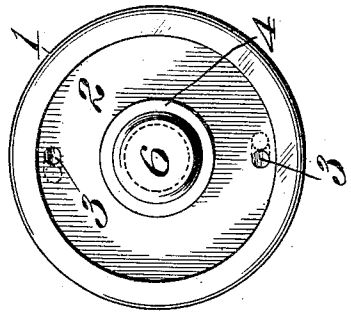


Fig. III.

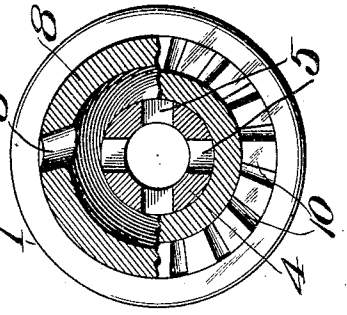


Fig. I.

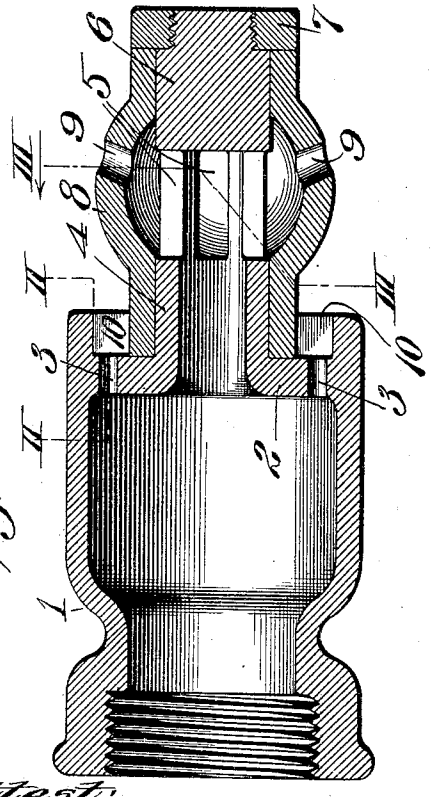


Fig. II.

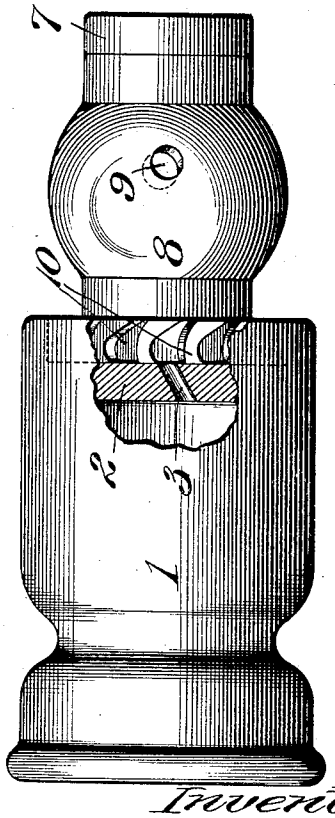


Fig. II.

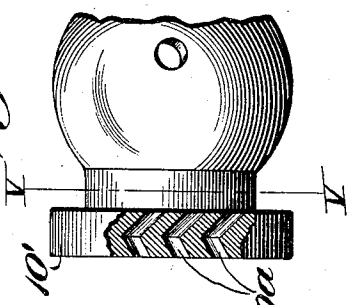
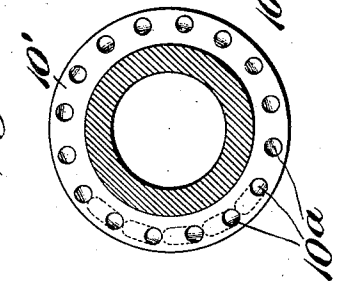


Fig. V.



Witnesses:
Jno. H. Scott
Blanche Hagan.

Inventor:
John Rosborough,
by Geo. H. Knight atty.

UNITED STATES PATENT OFFICE.

JOHN ROSBOROUGH, OF ST. LOUIS, MISSOURI.

NOZZLE.

No. 894,059. Specification of Letters Patent. Patented July 21, 1908.

Application filed April 13, 1908. Serial No. 426,728.

To all whom it may concern:

Be it known that I, JOHN ROSBOROUGH, a citizen of the United States of America, residing in the city of St. Louis and State of Missouri, have invented certain new and useful Improvements in Nozzles, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

My invention relates to a nozzle having a rotatable or whirlable jet member and intended more particularly for use in cleaning boiler tubes but which may be used for various other purposes.

Figure I is a longitudinal section taken through my nozzle. Fig. II is in part an elevation of the nozzle and in part a longitudinal section taken on line II—II, Fig. I. Fig. III is a cross section taken on irregular line III—III, Fig. IV. Fig. IV is an end elevation of the nozzle with its rotatable member omitted to afford a view of the parts at the rear of said rotatable member. Fig. V is a cross section taken on line V—V, Fig. VI and illustrating a modification of the turbine member of the nozzle. Fig. VI is in part an elevation and in part a longitudinal section of the modified rotatable member of the nozzle including the turbine member.

1 designates the main body of my nozzle which is chambered and is adapted to be applied to a hose or other water conducting pipe. Near the forward end of the main body and extending transversely of the body at its interior is a transverse wall 2 that contains ducts 3 which extend diagonally through the wall and serve as passage-ways for water that is delivered into the body 1.

4 is a hollow stem carried by the transverse wall 2 and extending forwardly therefrom. This stem is provided with a plurality of ports 5 through which water may escape from the stem after it has flowed therethrough from the interior of the body 1 to said ports. The stem 4 terminates at its forward end in a solid portion 6 that is adapted to receive a nut 7 or other retaining member that serves to confine a rotatable member to be next described.

8 designates a rotatable member that is loosely fitted to the hollow stem 4 between the transverse wall 2 and the retaining member 7. This rotatable member has its part which surrounds the ports in the hollow stem swelled or enlarged and in the swelled portion of the rotatable member are jet holes 9 that preferably extend at angles through the rotatable member and in forward directions. At the rear end of the rotatable member is a turbine member 10 which occupies a position within the forward end of the main body 1 and immediately in front of the transverse wall 2 in order that water passing through the diagonal ducts 3 in said wall will strike against the veins of the turbine member. The turbine member is preferably composed of a plurality of vanes that extend inwardly from the edge of the member but it may be made as illustrated in Figs. V and VI in which the turbine member indicated at 10′ is produced by drilling holes 10^a through the turbine member from opposite sides thereof and in diagonal directions so that the holes will meet each other, as seen most clearly in Fig. VI, and when water is delivered into the ducts produced by said holes after passing through diagonal ducts 3 it will act with driving effect in the same manner as in the use of the turbine member seen in Figs. I to III inclusive.

In the practical use of my nozzle the water that is delivered into the main body member 1 flows partially through the hollow stem 4, escapes therefrom through the ports 5 into the rotatable member 8 and is discharged through the jet holes 9 in jets or streams. The remainder of the water flows through the diagonal ducts 3 in the transverse wall 2 and by striking against the turbine member at the rear end of the rotatable member 8, acts to impart rotation to said rotatable member so that the water escaping through the jet holes 9 will be discharged in a circular path and will act to clean any surface with which it comes into contact.

I claim:

1. In a nozzle, the combination of a hollow body having a hollow ported stem at its forward end, and a rotatable member loosely surrounding said stem and provided with a jet hole located opposite the ported portion of said stem, substantially as set forth.

2. In a nozzle, the combination of a hollow body having a hollow ported stem at its forward end, a rotatable member loosely surrounding said stem and provided with a jet hole located opposite the ported portion of said stem, and a turbine member at the rear end of said rotatable member, said hol-

low body being provided with a duct through which liquid may pass to strike said turbine member, substantially as set forth.

3. In a nozzle, the combination of a hollow body provided with a transverse wall containing a duct, and a stem extending forwardly from said wall, a rotatable member loosely fitted to said stem and provided with a jet hole, and a turbine member at the rear end of said rotatable member located in juxtaposition to said transverse wall, substantially as set forth.

4. In a nozzle, the combination of a hollow body provided with a transverse wall containing a duct extending diagonally therethrough, and a stem extending forwardly from said wall, a rotatable member loosely fitted to said stem and provided with a jet hole, and a turbine member at the rear end of said rotatable member located in juxtaposition to said transverse wall, substantially as set forth.

JOHN ROSBOROUGH.

In presence of—
BLANCHE HOGAN,
LILY ROST.