No. 782,680. PATENTED FEB. 14, 1905.

W. H. MILLSPAUGH.

SHOWER PIPE.

APPLICATION FILED MAY 28, 1904.

Fig. 1.

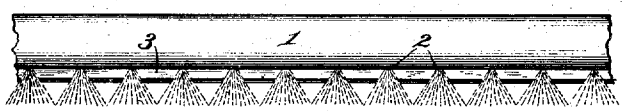
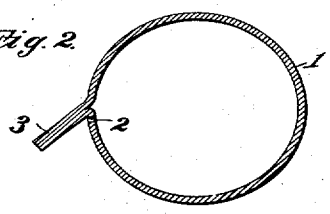


Fig. 2.



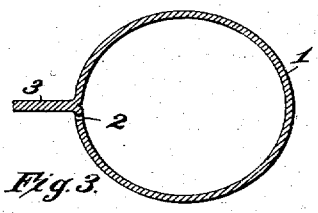


Fig. 3.

Fig. 4.

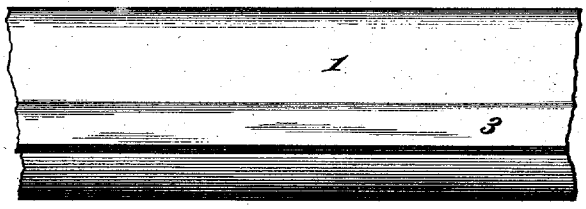
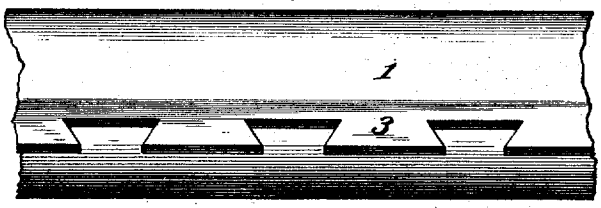


Fig. 5.



WITNESSES:

Irving Plant

S. C. Ballinger

INVENTOR

William H. Millspaugh

BY

Wilkinson, Cornell & Coe

ATTORNEYS

PHOTO-LITHOGRAPHED BY SACHETT & WILHELMS LITHO. & PTG. CO. NEW YORK.

No. 782,680. Patented February 14, 1905.

UNITED STATES PATENT OFFICE.

WILLIAM HULSE MILLSPAUGH, OF SANDUSKY, OHIO, ASSIGNOR TO THE SANDUSKY FOUNDRY & MACHINE COMPANY, OF SANDUSKY, OHIO, A CORPORATION OF OHIO.

SHOWER-PIPE.

SPECIFICATION forming part of Letters Patent No. 782,680, dated February 14, 1905.

Application filed May 28, 1904. Serial No. 210,240.

To all whom it may concern:

Be it known that I, WILLIAM HULSE MILLSPAUGH, a citizen of the United States, residing at Sandusky, in the county of Sandusky and State of Ohio, have invented certain new and useful Improvements in Shower-Pipes; 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 relates to that class of perforated pipes or tubes known as "shower-pipes," adapted for discharging water in sheet form—such, for example, as the perforated pipes used in cleansing apparatus for paper-making machines for showering or washing the rapidly-moving making-wires and felt conveyers, also the dandy-rolls, cylinders, and other parts of such machines to keep them free from adhering fibers and foreign substances contained in the pulp.

For economical and efficient cleansing of paper-making machinery it is essential to shower the parts to be cleansed with an unbroken and forceful sheet of liquid. Several forms of shower-pipes for this purpose are illustrated and described in my former United States patents, Nos. 596,939, 596,940, and 596,941, issued January 4, 1901. In each of these examples a continuous sheet of the cleansing liquid is obtained by a discharge-pipe having a line of orifices and provided with suitable nozzles, deflecting lips or planes angularly disposed to the action of the issuing jets or streams which impinge on said lips or planes and thence discharge in thin sheets having diverging sides, the outer edges of which sheets all meet at the same line to form a continuous unbroken sheet. The sizes and distances between the orifices or discharge-ports and their positions relative to their deflecting-planes determine the line at which the several streams meet, and the shower-pipe is preferably so located with relation to the parts to be cleansed as to cause such meeting-line to lie on or approximately on the surface to be showered. The deflecting lips or planes are secured to the pipe adjustably; but in practice it has been demonstrated that the deflecting-plane must be fixed, owing to the fact that if placed adjustably the discharge-ports are more or less closed, and any foreign substance contained in the water tends to clog the outlet.

The object of my present invention is to provide a shower-pipe of the simplest, lightest, strongest, and least expensive construction possible and one adapted to emit a more efficient and economical sheet of water by virtue of a closer arrangement of orifices and reduction of their sizes with a fixed deflecting plate or plates for uniting the discharging streams in a thin unbroken sheet at a short distance from the pipe.

To this end my invention consists, broadly, of a shower-pipe having a longitudinal line of discharge-ports and closely adjacent thereto a deflecting plate or lip formed integrally with the pipe and projecting bodily therefrom at an angle to the ports or a number of such lips arranged parallel and constituting, in effect, a single continuous deflecting-plane, and, further, the improved construction hereinafter described and claimed of a seamless flanged pipe formed from a split tubular piece of metal having its longitudinal edges flanged, drawn together, and bent over in proper relation to the line of orifices to provide the deflecting plate or plates.

The invention will be fully described with reference to the accompanying drawings, which are to be taken as a part of this specification, and then pointed out in the claims following this description.

In said drawings, wherein corresponding parts in the different views are indicated by the same symbols of reference, Figure 1 represents in longitudinal elevation or bottom plan view a section of a shower-pipe embodying my invention, showing also the shower discharging therefrom. Fig. 2 is an enlarged cross-section through said pipe. Fig. 3 is a cross-section showing the deflecting plate or flange before it has been bent over at an angle to the discharge-ports. Fig. 4 is a longitudi-

nal elevation of a fragment of the pipe. Fig. 5 is a similar view to Fig. 4, showing the deflecting lip or plate with portions cut away.

The numeral 1 denotes the shower-pipe or discharge-tube, which may be mounted in proper relation to the part or surface to be cleansed and have suitable communication with a source of water-supply under pressure. The pipe is perforated by a line of orifices or discharge-ports 2, and closely adjacent to and extending longitudinally of the line of ports is a deflecting plate or lip 3, formed as an integral flange projecting bodily from the pipe at an angle to the ports so that the issuing jets or streams impinge on the deflecting-plate and discharge in sheets having divergent edges, which meet at a line near the pipe in one thin continuous sheet. In this instance the ports are formed radially and the deflecting-plate projects from the pipe at an angle to a plane transverse to its periphery. This construction is simple and inexpensive, light in weight, strong, and durable. The integral flange or plate serves as a strengthening-rib and is not liable to become dislocated in the slightest degree, but always remains in fixed relation to the ports. Furthermore, a very close arrangement of the discharge-ports is permitted. By virtue of such close spacing of the orifices the issuing streams or divergent sheets are caused to blend into a continuous sheet at a line much closer to the pipe, and hence the pipe can be set nearer the surface or part to be cleansed, which is not only desirable from the standpoint of utility of space, especially in paper-making machinery, enabling a pipe to be placed where otherwise it might be impracticable, but also causes the water to strike with greater force and with less loss of energy by friction with the air. By spacing the orifices more closely their sizes may also be correspondingly reduced, and thus a saving of water effected and a more even as well as economical distribution of a given quantity of liquid obtained. The deflecting-plane being continuous along the line of orifices insures an accurate alinement of the several discharging streams or sheets, so that they meet in the same plane and form a perfect unbroken sheet.

It is feasible to serrate or cut away such portions of the deflecting-plate between the orifices as are not traversed by the issuing jets or otherwise form a series of parallel deflecting-lips constituting, in effect, a continuous plane, and such variations which may be desired for reducing weight or other purposes will therefore be considered within the scope of my invention. A deflecting-plate so serrated is shown in Fig. 5.

I shall now describe a novel and preferred mode of forming the pipe, which is facile and inexpensive and results in a construction of great simplicity, strength, and efficiency. In Fig. 3 is shown a seamless tube having a flange or lip drawn on same, as shown. This tube may be formed from a strip of sheet or plate metal by rolling it into tubular form and leaving its edges flanged outward, as shown. The said flanged edges are drawn together and welded, brazed, or otherwise suitably joined to form the flange or lip of the finished tube. The discharge ports or orifices are then formed in the tube beside the flange, the orifices being usually formed radially, since this has been found most satisfactory, and the flange is then bent over the row of orifices at the proper angle, resulting in the finished shower-pipe. (Shown in Fig. 2.) Other modes may be followed in constructing the pipe, as by flanging one edge only of a strip rolled or formed into a seamless tube or by casting, rolling, or forming a tube in any of the usual ways with a projecting flange. It may be desirable in some cases to weld or braze the deflecting-plate on the tube, forming practically an integral structure, and this is also to be comprehended within the scope of the annexed claims. It may also be desirable to provide a plurality of rows of orifices with deflecting-plates for each row.

In my copending application for patent filed May 14, 1904, Serial No. 157,162, I have set forth and claimed an improved shower-pipe having a line of discharge-orifices and a fixed or rigid deflecting-plate extending longitudinally of and continuous with said line of orifices and projecting from the pipe at an angle thereto. As one embodiment of the invention claimed in said application there is illustrated a pipe having an integral flange or deflecting-plate, to which, however, no specific claim *per se* is made therein.

I claim as my invention and desire to secure by Letters Patent of the United States—

1. A shower-pipe consisting of a tube having a line of discharge-ports and closely adjacent thereto an integral lip or flange projecting from the tube and constituting a deflecting-plate continuous with said line of ports and adapted to deliver the water therefrom in a continuous sheet.

2. A shower-pipe consisting of a tube having a line of discharge-ports and an integral deflecting lip or plate extending longitudinally thereof closely adjacent to and continuous with said line of ports and projecting from the tube at an angle to a plane tangential to its circumference, for delivering the water from said plate in a continuous sheet.

3. A shower-pipe consisting of a tube having a line of discharge-ports and closely adjacent thereto an integral longitudinal lip or flange constituting a flat deflecting-plate continuous with said line of ports and projecting from the tube at an angle to a plane tangential to its circumference, for delivering the water from said plate in a continuous sheet.

4. A shower-pipe consisting of a tube having a longitudinal line of radial discharge-ori-

fices and formed with an integral longitudinal lip or flange projecting from the tube closely adjacent to said orifices but at an acute angle thereto, for receiving the water issuing from said orifices and delivering it in a continuous sheet.

5. A shower-pipe consisting of a metal tube having a longitudinal line of discharge-orifices and a closely-adjacent integral longitudinal lip or flange bent over at an acute angle to said orifices to receive and deliver the water issuing therefrom in a continuous sheet.

6. A shower-pipe consisting of a sheet-metal tube having a longitudinal lip or flange drawn thereon at an angle to a tangential plane, and a closely-adjacent line of discharge-orifices opening onto the side of said lip or flange nearer the tube.

7. A shower-pipe consisting of a split tube having its longitudinal edges flanged outward, joined together to form a deflecting-plate, and an adjacent line of discharge-orifices opening onto such plate at an angle thereto.

8. A shower-pipe consisting of a split tube having its longitudinal edges joined together and an internal flange projecting outward from at least one of such edges, and an adjacent line of discharge-ports opening onto such flange at an angle thereto.

9. A shower-pipe consisting of a split tube having its longitudinal edges flanged outward and joined together, a line of discharge-orifices extending longitudinally of such flange, and said flange bent over said line of orifices at an angle to a plane tangential to the circumference of the pipe.

In testimony whereof I affix my signature in presence of two witnesses.

WILLIAM HULSE MILLSPAUGH.

Witnesses:
MINNIE ZIMMERMAN,
SIDNEY FROHMAN.

Correction in Letters Patent No. 782,680.

It is hereby certified that in Letters Patent No. 782,680, granted February 14, 1905, upon the appication of William Hulse Millspaugh, of Sandusky, Ohio, for an improvement in "Shower-Pipes," an error appears in the printed specification requiring correction, as follows: In line 26, page 3, the word "internal" should read *integral;* and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 28th day of February, A. D. 1905.

[SEAL.]

F. I. ALLEN,
Commissioner of Patents.

fices and formed with an integral longitudinal lip or flange projecting from the tube closely adjacent to said orifices but at an acute angle thereto, for receiving the water issuing from said orifices and delivering it in a continuous sheet.

5. A shower-pipe consisting of a metal tube having a longitudinal line of discharge-orifices and a closely-adjacent integral longitudinal lip or flange bent over at an acute angle to said orifices to receive and deliver the water issuing therefrom in a continuous sheet.

6. A shower-pipe consisting of a sheet-metal tube having a longitudinal lip or flange drawn thereon at an angle to a tangential plane, and a closely-adjacent line of discharge-orifices opening onto the side of said lip or flange nearer the tube.

7. A shower-pipe consisting of a split tube having its longitudinal edges flanged outward, joined together to form a deflecting-plate, and an adjacent line of discharge-orifices opening onto such plate at an angle thereto.

8. A shower-pipe consisting of a split tube having its longitudinal edges joined together and an internal flange projecting outward from at least one of such edges, and an adjacent line of discharge-ports opening onto such flange at an angle thereto.

9. A shower-pipe consisting of a split tube having its longitudinal edges flanged outward and joined together, a line of discharge-orifices extending longitudinally of such flange, and said flange bent over said line of orifices at an angle to a plane tangential to the circumference of the pipe.

In testimony whereof I affix my signature in presence of two witnesses.

WILLIAM HULSE MILLSPAUGH.

Witnesses:
MINNIE ZIMMERMAN,
SIDNEY FROHMAN.

Correction in Letters Patent No. 782,680.

It is hereby certified that in Letters Patent No. 782,680, granted February 14, 1905, upon the appication of William Hulse Millspaugh, of Sandusky, Ohio, for an improvement in "Shower-Pipes," an error appears in the printed specification requiring correction, as follows: In line 26, page 3, the word "internal" should read *integral;* and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 28th day of February, A. D. 1905.

[SEAL.]

F. I. ALLEN,
Commissioner of Patents.

Correction in Letters Patent No. 782,680.

It is hereby certified that in Letters Patent No. 782,680, granted February 14, 1905, upon the appication of William Hulse Millspaugh, of Sandusky, Ohio, for an improvement in "Shower-Pipes," an error appears in the printed specification requiring correction, as follows: In line 26, page 3, the word "internal" should read *integral;* and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 28th day of February, A. D. 1905.

[SEAL.]

F. I. ALLEN,

Commissioner of Patents.