J. H. KINEALY.

SPRAY HEAD.

APPLICATION FILED SEPT. 3, 1915.

1,272,274. Patented July 9, 1918.

Fig. 1.

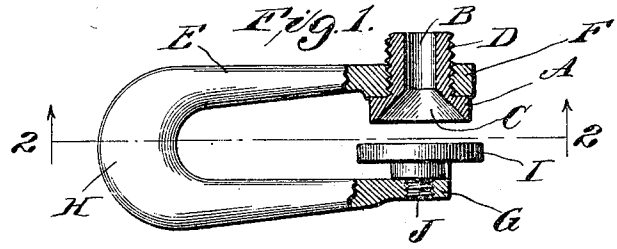


Fig. 2.

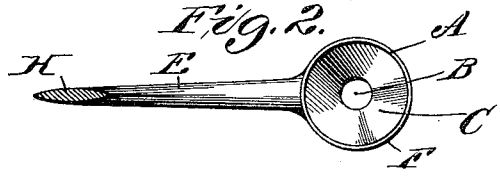


Fig. 3.

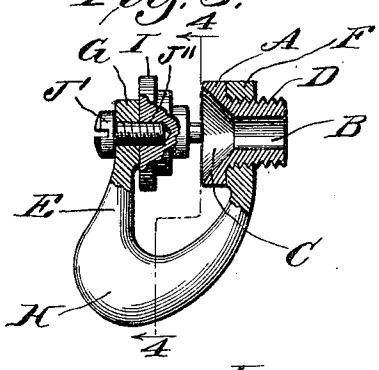


Fig. 4.

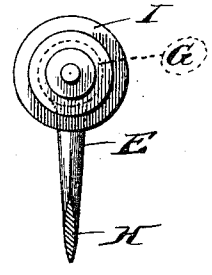


Fig. 5.

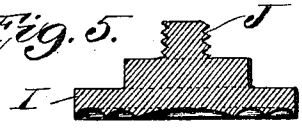


Fig. 7.

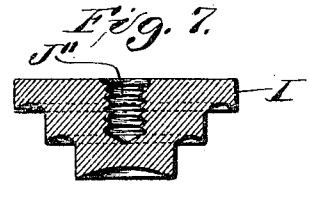


Fig. 6.

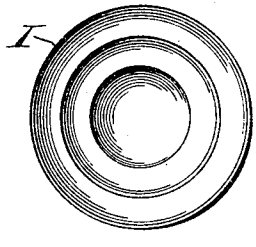
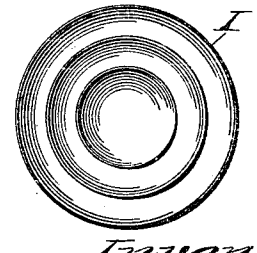


Fig. 8.



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SPRAY-HEAD.

1,272,274. Specification of Letters Patent. Patented July 9, 1918.

Application filed September 3, 1915. Serial No. 48,867.

To all whom it may concern:

Be it known that I, JOHN H. KINEALY, a citizen of the United States, residing at Ferguson, in the county of St. Louis and State of Missouri, have invented a new and useful Improvement in Spray-Heads, of which the following is a full, clear, and exact specification, reference being had to the accompanying drawings, which form a part thereof.

My invention relates to spray heads to be used wherever it is desirable to form a spray of water or similar liquid, but particularly to spray heads to be used in connection with air washing and purifying apparatus, or where the water to be sprayed is in an impure or dirty condition. When a spray head is used in connection with an air washing or air purifying apparatus or where the water to be sprayed is dirty there is great likelihood of the spray head being inoperative by the accumulation of dirt if any of the openings through which the dirty water must pass are small. In connection with air washers it is customary to use the water for washing the air over and over again, so that it soon becomes very dirty. In order to prevent as much as possible of the dirt from entering the spray head it is usual to pass the water through a screen before it is delivered to the spray head. If the spray head has any small orifice through which the water must pass it is necessary that the openings in the screen shall be very small, usually about one third as large as the smallest dimension of the smallest opening in the spray head. The result of this is that if the opening through the spray head is small the screen, if made of proper size, is likely to become very quickly clogged and thus rendered more or less inoperative. If the screen is made so that it does not easily become clogged and the opening in the spray head is small, then it becomes necessary to clean the spray head at frequent intervals in order that it may be at all times efficient and operative.

The object of my invention is to provide a spray head having large clear spaces through which the water is passed so as to make the spray head noncloggable; and a further object of my invention is to provide a spray head which not only is noncloggable but which can be used to give different kinds of sprays.

My invention is fully shown in the accompanying drawings where similar letters are used to designate similar parts.

Figure 1 is a view, part in elevation and part in section of a spray head embodying my invention; Fig. 2 is a view of a section on the line 2—2 of Fig. 1; Fig. 3 is a view of another form of a spray head embodying my invention; Fig. 4 is a view of a section along the line 4—4 of Fig. 3; Figs. 5 and 6 are views of a form of spray plate; and Figs. 7 and 8 are views of another form of spray plate.

Referring to the figures, A is a body portion having a bore B which terminates in an outwardly flaring mouth C which is preferably of the form of a truncated cone whose vertex angle is 90 degrees. The body portion A is provided with a shank D which has exterior screw threads. E is a yoke having at one end a head F through which is formed an opening provided with interior threads adapted to engage with the threads formed on the shank D of the body portion A. The end G of the other leg of the yoke E has attached to it the spray plate I. G may have through it a threaded opening adapted to engage a shank J formed on the spray plate I, as shown in Figs. 1 and 5, or G may be provided with an unthreaded opening, as shown in Fig. 3, through which is passed a screw which engages with a threaded recess J″ in the spray plate, as is shown in Figs. 3 and 7. When it is desired that the water shall leave the spray head in the form of a flat sheet which breaks into a spray at some distance from the spray head, a flat plate, such as is shown in Fig. 1 is used, but when it is desired that the water shall be broken into a spray of a greater or less degree of fineness immediately at the spray head, spray plates such as shown in Fig. 3 or Figs. 5 and 6 or Figs. 7 and 8 are used. Except in the case of a flat plate I make the spraying surface on the face of the plate adjacent to the outlet, of a plurality of surfaces placed substantially concentric with the bore of the outlet. In order to interfere as little as possible with the continuity of the spray in all directions from the spray head, that part of the yoke E with which the water leaving the head contacts is flattened and made to taper to a sharpened front edge and to a sharpened rear edge, as shown at H.

I have found by experiment that an almost perfect sheet can be formed by using a flat

spray plate, such as shown in Fig. 1, placed as far as three sixteenths of an inch from the end of the outlet C when the bore B is three sixteenths of an inch or even a quarter of an inch in diameter, provided the outlet is shaped substantially as shown in the drawings. While I do not wish to restrict myself to an outlet having the shape of a truncated cone having a vertex angle of 90 degrees, I have found that a vertex angle of 90 degrees gives somewhat better results than a smaller angle. When a stepped spray plate, such as that shown in Figs. 3 and 4 is used, the spray formed by the head is quite fine and projects forwardly in a somewhat cone shaped body. Spray plates, such as shown in Figs. 5 and 6 and in Figs. 7 and 8 give different kinds of sprays, and almost any desired kind of spray may be obtained by using a properly shaped spray plate. When in use the head is attached to a suitable water supply pipe by means of that part of the threaded shank D which projects beyond the head F of the yoke E.

I am unable to explain exactly how the outwardly flaring outlet C acts in the formation of the spray, but I have found as a result of experiments that a much better and more efficient form of spray is made when an outwardly flaring outlet is used than when a straight cylindrical or a converging outlet is used; and I have further found that with the outwardly flaring outlet a suitable spray will be formed when the spray plate is held at a considerable distance from the outlet, while when the outlet is not outwardly flaring it is necessary to have the spray plate close to the outlet in order to form a suitable spray. It appears that the stream of water passes outwardly through the bore B and impinges upon the plate I with the result that some of the water is thrown to one side while a part is reflected onto the walls of the outwardly flaring mouth and by these are again thrown forward toward the spray plate. The result of this is that the water is formed in a sheet or into a spray of a certain kind dependent upon the shape of the impinging surface of the spray plate, and the kind of spray is dependent upon the shape of the surface of the spray plate and upon the deflection of part of the water back and forth between the spray plate and the outwardly flaring walls of the outlet C.

I have found that by my improved construction it is possible to make a spray head that will give an efficient sheet of water or a finely divided, mist-like spray, both suitable for use in connection for air washing apparatus, and while having the least dimension of any passage through which the water must pass not less than three sixteenths of an inch and such a spray head is practically noncloggable.

What I claim as new and desire to secure by Letters Patent, is:

1. In a spray head, the combination of a body portion having an externally threaded part and a bore terminating in an outwardly flaring outlet, a yoke having the part intermediate its ends flattened and made to taper to a sharpened front edge and to a sharpened rear edge, one end of said yoke having an internally threaded opening adapted to receive said threaded part of said body portion, and a spray plate carried by said yoke in front of said outlet.

2. In a spray head, the combination of a body portion having a bore terminating in an outwardly flaring outlet and an externally threaded part concentric with said bore, a yoke having the part intermediate its ends flattened and tapered to a sharpened front edge and to a sharpened rear edge, one end of said yoke having an internally threaded opening adapted to receive said threaded part of said body portion, and a spray plate carried by said yoke in front of said outlet.

3. In a spray head, the combination of a body portion having a bore terminating in an outwardly flaring outlet and an externally threaded part concentric with said bore, a yoke having its ends provided with openings which have a common axis and having the part intermediate its ends flattened and made to taper to a sharpened front edge and to a sharpened rear edge, the opening in one end of said yoke being internally threaded to receive said threaded part of said body portion and the opening in the other end of said yoke being adapted to receive a spray-plate-holding means, a spray plate, and a spray-plate-holding means.

4. In a spray head, the combination of a body portion having an externally threaded part and a bore terminating in an outwardly flaring outlet, a yoke having the part intermediate its ends flattened and made to taper to a sharpened front edge and to a sharpened rear edge, one end of said yoke having an internally threaded opening adapted to receive said threaded part of said body portion, and a spray plate carried by said yoke in front of said outlet and having its face adjacent to said outlet formed of a plurality of surfaces placed substantially concentric with the axis of said outlet.

5. In a spray head, the combination of a body portion having a bore terminating in an outwardly flaring outlet and an externally threaded part concentric with said bore, a yoke having the part intermediate its ends flattened and tapered to a sharpened front edge and to a sharpened rear edge, one end of said yoke having an internally threaded opening adapted to receive said threaded part of said body portion, and a spray plate carried by said yoke in front of said outlet and having its face adjacent to said outlet

formed of a plurality of surfaces placed substantially concentric with the axis of said outlet.

6. In a spray head, the combination of a body portion having a bore terminating in an outwardly flaring outlet and an externally threaded part concentric with said bore, a yoke having its ends provided with openings which have a common axis and having the part intermediate its ends flattened and made to taper to a sharpened front edge and to a sharpened rear edge, the opening in one end of said yoke being internally threaded to receive said threaded part of said body portion and the opening in the other end of said yoke being adapted to receive a spray-plate-holding means, a spray plate having its face adjacent to said outlet formed of a plurality of surfaces placed substantially concentric with the axis of said outlet, and a spray-plate-holding means.

7. In a spray head, the combination of a body portion having a bore terminating in an outwardly flaring outlet and an externally threaded part concentric with said bore and terminating against a shoulder, a yoke having its ends provided with openings which have a common axis and having the parts intermediate its ends flattened and made to taper to a sharpened front edge and to a sharpened rear edge, the opening in the inner end of said yoke being internally threaded to receive said threaded part of said body portion and the opening in the outer end of said yoke being adapted to receive a spray-plate-holding means, a spray plate having its face adjacent to said outlet stepped and formed of a plurality of concentric surfaces, and a spray-plate-holding means whereby said spray plate is held central with respect to said outlet.

In witness whereof I have signed my name to this specification.

JOHN H. KINEALY.

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