Jan. 7, 1964 S. E. KUIKEN 3,116,880

SPRAY HEAD ASSEMBLY

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Fig. 1

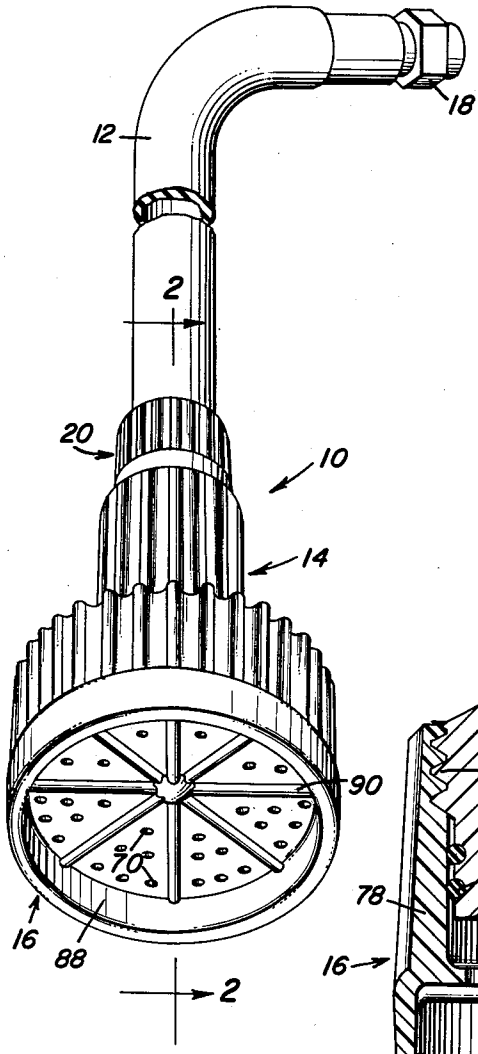


Fig. 2

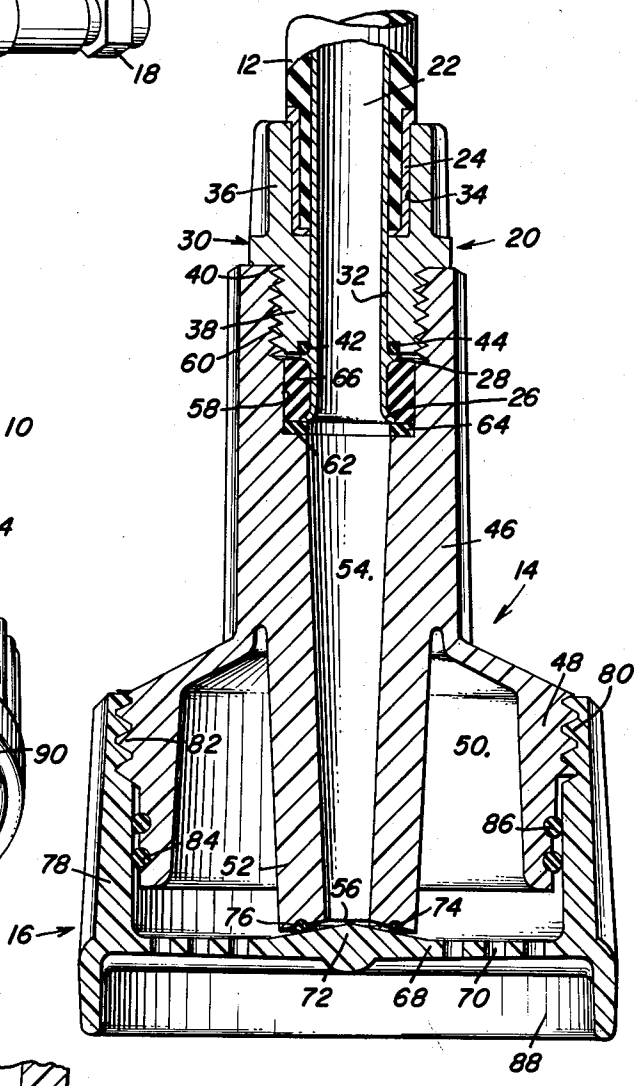
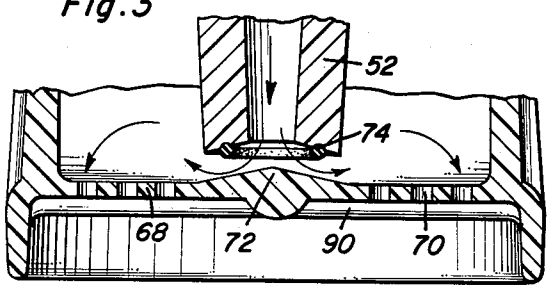


Fig. 3



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SPRAY HEAD ASSEMBLY

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The present invention generally relates to spray head assemblies, and more particularly to a novel spray head assembly wherein the water temperature, once adjusted, can be maintained constant and unaffected by any adjustment of the water flow from a maximum flow to a complete shutting off of the flow.

It is contemplated that the spray head assembly of the present invention be particularly useful in commercial establishments such as beauty shops or barber shops wherein the application of water to the hair and scalp, as during a shampoo, is frequently required. As will be appreciated, this water must be of a temperature that is comfortable to both the operator and the patron. However, most rinse spray devices now in use are generally fastened to a central spigot or tap which connects with both the hot and cold water, thus requiring the operator to manipulate both the hot and cold water faucets for each rinse with the cold water generally being turned on first and the flow of hot water gradually increased until the proper temperature is obtained. It will be appreciated that such a procedure is wasteful of both time and water. Accordingly, one of the primary objects of the present invention is to provide a novel means for eliminating this waste of valuable time and avoiding the costly waste of warm water.

In line with this primary object, it is also an intention of the present invention to provide a device which will enable the operator to adjust the hot and cold water only once with the flow of water subsequently being adjusted directly from the spray head assembly without any further adjustment of the water temperature being necessary.

Likewise, it is an object of the present invention to provide a means wherein the flow of water can be instantly shut-off or turned on without affecting the temperature.

Additionally, it will be appreciated that the use of the present device will result in a substantial saving of wear on the various portions of the water faucets since the mixing fixture need only be turned on and off at the beginning and close of the day.

Further, it is an object of the present invention to provide a novel spray head assembly which is generally simple in structure and trouble free in operation, the device dispersing an even flow of water over an area substantially enlarged relative to the discharge spout of a conventional mixing fixture.

These together with other objects and advantages which will become subsequently apparent reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming a part hereof, wherein like numerals refer to like parts throughout, and in which:

FIGURE 1 is a perspective view of the spray head assembly comprising the present invention;

FIGURE 2 is an enlarged cross-sectional view taken substantially on a plane passing along line 2—2 in FIGURE 1 and illustrating the device in a water sealing position; and

FIGURE 3 is a partial cross-sectional view similar to the lower portion of FIGURE 2, however illustrating the device in a flow permitting orientation.

Referring now more particularly to the drawings, reference numeral 10 generally indicates the spray head assembly comprising the present invention. This assembly 10 consists basically of an inlet conduit 12, a nozzle means 14 and a dispersing means 16.

The inlet conduit, constructed of any suitable preferably flexible material such as rubber, is provided at the rear end thereof with any suitable type of fitting 18 capable of securing this end of the conduit 12 to the central spigot or spout of a conventional mixing fixture (not illustrated) wherein the hot and cold water is internally mixed and the mixture discharged through the single spigot. The forward end of the conduit 12 is secured to the rear end of the nozzle means 14 in fluid communicating relationship by means of a connecting assembly 20. The connecting assembly 20 consists of a tubular member 22 having the rearward end thereof frictionally engaged within the forward end of the conduit 12 and maintained therein by a crimped ferrule 24 engaged about the outer surface of the conduit 12. The forward end of the hollow tube 22 projects a substantial distance beyond the forward end of the inlet conduit 12 and terminates in an outwardly swedged portion 26, an integrally formed outwardly projecting peripheral rib 28 being also provided on the tube 22 at a point spaced above the outwardly swedged end 26.

The connecting assembly 20 also includes a cap 30 having a centrally located longitudinally extending passageway 32 therethrough, the rearward end of this passageway 32 being enlarged as at 34 so as to accommodate the forward ferrule enclosed end of the conduit 12, the remainder of the passageway 32 being of a size so as to receive the tube 22. The outer configuration of the cap 30 consists of an enlarged knurled upper portion 36 and a reduced threaded lower portion 38, a circumferential shoulder 40 being provided between these two portions for abutment against the rearward end of the nozzle means 14. Additionally, the cap 30, at the forward end thereof is provided with a notch 42 communicating peripherally with the passageway 32 of a width slightly greater than the width of the rib 28 and having an O-ring seal 44 therein bearing against the rib 28.

The nozzle means 14 consists of a knurled rearward portion 46 formed integrally with an enlarged forwardly extending circular wall 48 enclosing a forwardly opening enlarged chamber 50. Also formed integrally with the rear portion 46 of the nozzle means 14 is a forwardly extending tubular conduit or nozzle 52, this nozzle 52 having a cross section substantially less than the cross section of the chamber 50 so as to provide a substantial open space between the outer surface of the nozzle 52 and the inner surface of the wall 48. Additionally, the nozzle means 14 is provided with a longitudinally extending passageway 54 therethrough, the forward part of the passageway 54 converging slightly toward the discharge end 56 of the nozzle portion 52.

The rearward end of the passageway 54 is provided with an enlarged portion 58 for the reception of the forward portion of the connecting assembly 20. This enlarged portion 58 includes a threaded upper portion 60 within which the threaded portion 38 of the cap 30 is engaged which engagement simultaneously positions the swedged end 26 in contact with a sealing gasket 62 positioned on the shoulder 64 provided between the enlarged portion 58 and the forward portion of the passageway 54, thus providing an effective sealing. Additionally, it will be noted that the present invention also contemplates the provision of an additional sealing means 66 secured between the swedged end 26 and peripheral rib 28 thus providing further insurance against any undesirable leakage.

The dispersing means 16 consists basically of a circular plate 68 having a plurality of apertures 70 therethrough and being provided with a centrally located rearwardly extending conical portion 72, this rearwardly extending conical portion 72 being engageable within the complementarily formed dispensing end 56 of the tubular

conduit or nozzle 52 for sealing off the flow of water. Also, in order to effectively provide for the sealing off of the flow of water, a circular sealing ring 74 is provided within a circular groove 76 in the dispensing end 56 of the nozzle 52 with a portion of the sealing ring 74 projecting therebeyond for engagement with the surface of the conical portion 72 as illustrated in FIGURE 2. With attention being directed to FIGURE 3, it will be noted that this conical portion 72 also functions as a means for effectively distributing the water outwardly from the reduced end of the nozzle 52 to the plurality of apertures 70 provided throughout the circular plate 68 thus obtaining an enlarged discharge area and at the same time avoiding any of the undesirable force normally accompanying a direct flow of water from a nozzle.

In order to secure the dispersing means 16 to the nozzle means 14 for adjustment relative thereto so as to enable a variation in the flow, or in fact a complete shutting off of the flow, the plate 68 is provided with a peripheral rearwardly extending wall 78 having a knurled outer surface and being provided about the inner surface of the rearward portion thereof with a plurality of screw threads 80 engageable with the threads 82 provided on the outer rearward portion of the peripheral wall 48. Also, in order to provide an effective seal between the dispersing means 16 and the nozzle means 14, the forward portion of the wall 48 about its outer surface is provided with two O-ring seals 84 secured within grooves 86 and extending there beyond for sliding and sealing engagement with the inner surface of the peripheral wall 78. Further, in order to guide the flow of water as it comes through the apertures 70, a forwardly extending peripheral wall 88 is integrally formed with the plate 68. If so desired, a plurality of radially extending reenforcing ribs 90 can also be provided on the forward face of the plate 68.

From the foregoing, the manner in which the device of the present invention is to be used and the advantages obtained from its use are considered to be readily apparent. First, the inlet conduit is secured to the discharge spigot of a conventional mixing fixture, next the hot and cold water faucets are adjusted so as to achieve the desired temperature of water being discharged through the spigot, and finally, the dispersing cap 16 is adjusted relative to the nozzle means so as to regulate the flow of water, this dispersing means being capable of completely shutting off the flow and subsequently turning it on again without the necessity of making any further adjustment of the temperature after the initial adjustment thereby ensuring a constant temperature with the water at this temperature being immediately available, the necessity of regulating the hot and cold water faucets during each use of the water being eliminated thus resulting in a substantial saving in both time and water.

The foregoing is considered as illustrative only of the principles of the invention. Further, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction and operation shown and described, and accordingly all suitable modifications and equivalents may be resorted to, falling within the scope of the invention as claimed.

What is claimed as new is as follows:

1. A spray head assembly including an elongated hollow open end fluid conduit, means for communicating one end of said conduit with a fluid source, an enlarged enclosure having a clear and unobstructed interior space surrounding and spaced from the other end of the conduit, said enclosure including an imperforate peripheral wall about said conduit extending from a point to the rear of said other end to a point forward thereof, an imperforate rear wall fixed between the rear end of the peripheral wall and the adjoining portion of the conduit, and a forward wall positioned forward of said other end and adjustable toward and away from said other end for varying the rate of flow therefrom, said forward wall having a rearwardly projecting conical deflecting portion on the inner surface thereof in alignment with said other end of the conduit, and a plurality of apertures through said forward wall spaced laterally outward from said other end of the conduit, whereby fluid flowing through said conduit first engages against said conical portion and is deflected rearwardly and outwardly into the enclosure for subsequent discharge through the apertures.

2. The structure of claim 1 wherein a portion of said peripheral wall projects forward of said forward wall.

3. The structure of claim 1 wherein said peripheral wall is formed in two sections adjustable relative to each other, a first rear section being secured to said rear wall and projecting forwardly to a point spaced rearwardly of said other end of the conduit, and a second section integral with said forward wall and projecting rearwardly into sealed overlapped relation to said first section.

4. In a spray head assembly, nozzle means, means for communicating said nozzle means with a source of fluid, and a dispersing means positioned forward of the nozzle means, said dispersing means being adjustable relative to said nozzle means for both completely sealing the nozzle means and also adjusting the rate of flow therefrom through the dispersing means, said nozzle means consisting of an elongated hollow tubular conduit and an enlarged clear and unobstructed closed rear end chamber positioned about and spaced a substantial distance from said tubular conduit, the forward end of said chamber being open, the forward end of said tubular conduit extending beyond the forward end of said chamber, said dispersing means including a circular plate, said circular plate having a plurality of apertures therethrough and a centrally located rearwardly extending conical portion, said conical portion being selectively engageable within the forward end of the tubular conduit for the sealing thereof, said conical portion being imperforate and acting as a means for radially deflecting the fluid rearwardly and outwardly toward the apertures upon a movement of said conical portion out of sealing engagement with the forward end of the tubular conduit.

5. The structure of claim 4 wherein the forward end of the tubular conduit is internally bevelled so as to conform to the rearwardly extending conical portion, and circular sealing means secured to said forward beveiled end and engageable about said conical portion for preventing the flow of fluid from said tubular conduit.

6. The structure of claim 5 wherein said dispersing means further includes a rearwardly extending peripheral wall secured to said circular plate and positionable about the chamber, said wall and said chamber having complementary threaded portions for the adjustment of the dispersing means relative to the nozzle means.

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