United States Patent [19]

Carson

[11] **3,713,587**

[45] **Jan. 30, 1973**

[54] SHOWER HEAD

[76] Inventor: **William S. Carson,** 200 St. Andrews Blvd., Apt. 3704, Winter Park, Fla. 32789

[22] Filed: **July 22, 1971**

[21] Appl. No.: **165,096**

Related U.S. Application Data

[63] Continuation-in-part of Ser. No. 41,950, June 1, 1970, abandoned.

[52] **U.S. Cl.** **239/383,** 239/447

[51] **Int. Cl.** **B05b 1/08**

[58] **Field of Search**.....239/251, 381, 383, 392, 394, 239/397, 437, 438, 442, 456, 457, 446, 447

[56] **References Cited**

UNITED STATES PATENTS

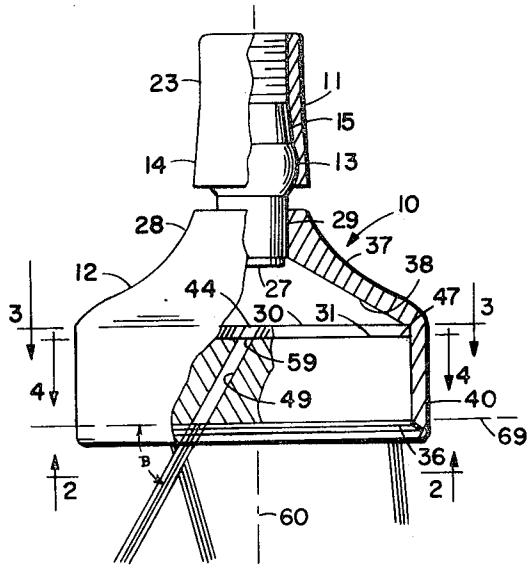
2,878,066	3/1959	Erwin	239/383
2,698,200	12/1954	Bottos	239/251
2,035,194	3/1936	Schellin	239/383
3,473,736	10/1969	Heitzman	239/383 X
3,568,716	3/1971	Heitzman	239/383 X
3,344,994	10/1967	Fife	239/457

Primary Examiner—M. Henson Wood, Jr.
Assistant Examiner—Michael Mar
Attorney—Roger L. Martin

[57] **ABSTRACT**

A shower head has a body portion rotatably mounted on a fitting adapted for connection with a pressurized source of water. The body portion is structured to provide three separate flow channels that project different types of streams including an oblique stream causing rotation of the body portion and a generally helically projected pattern that provides a massaging action on the bather, the body portion being equipped with relatively movable members that provide a valving action for selecting the desired flow channel and resulting stream form projected.

5 Claims, 10 Drawing Figures



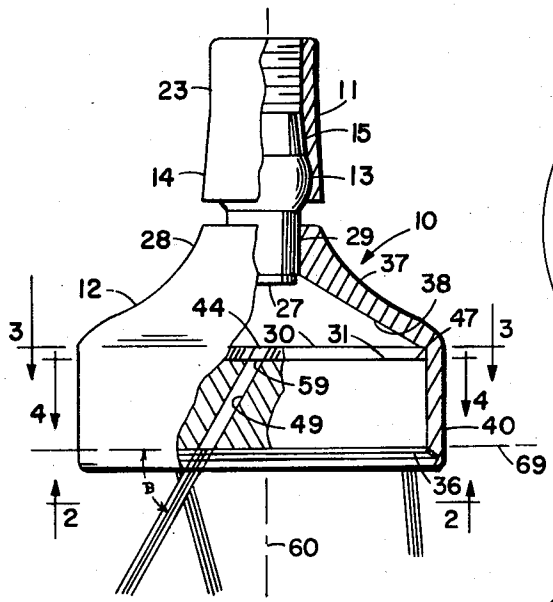


Fig. 1

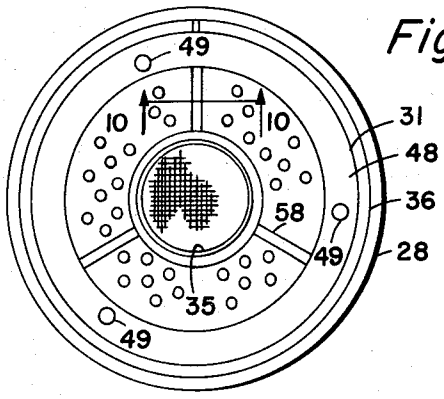


Fig. 2

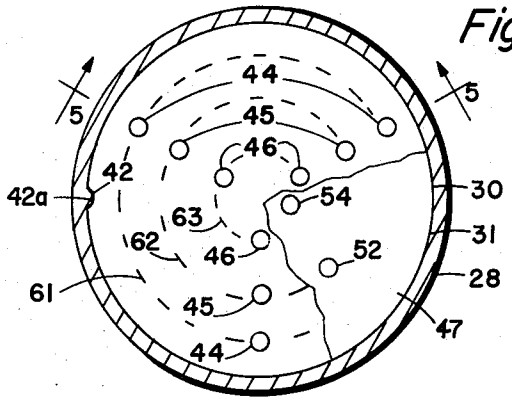


Fig. 3

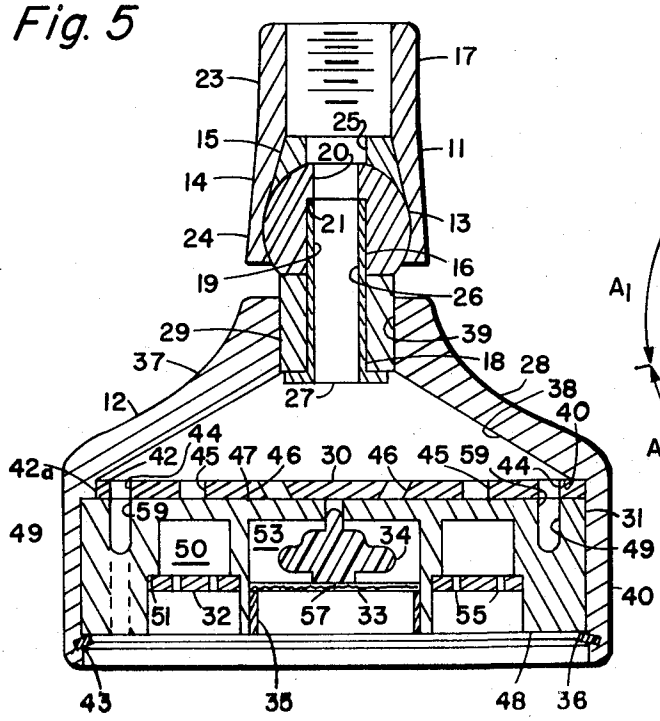


Fig. 5

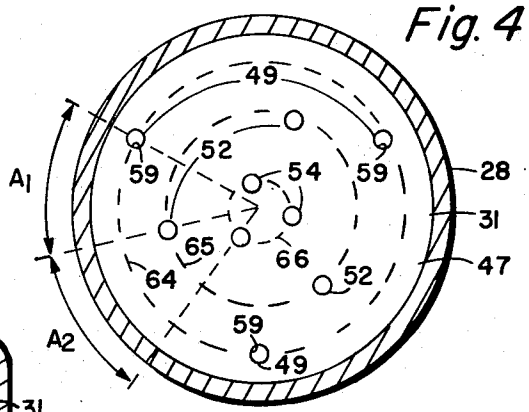


Fig. 4

INVENTOR.
William S. Carson
BY Roger H. Martin
ATTY.

Fig. 6

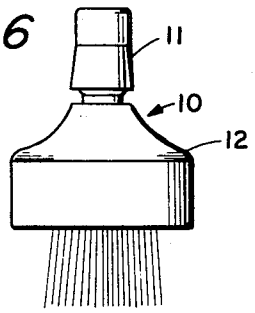


Fig. 8

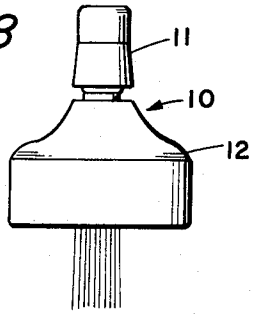


Fig 7

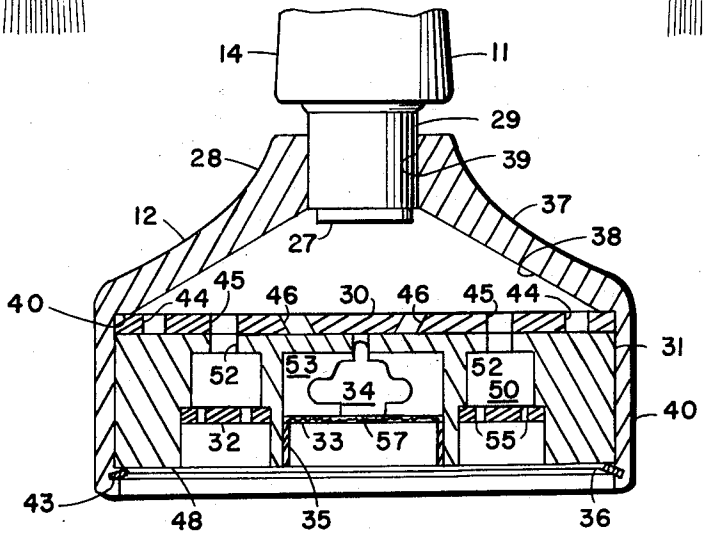


Fig. 9

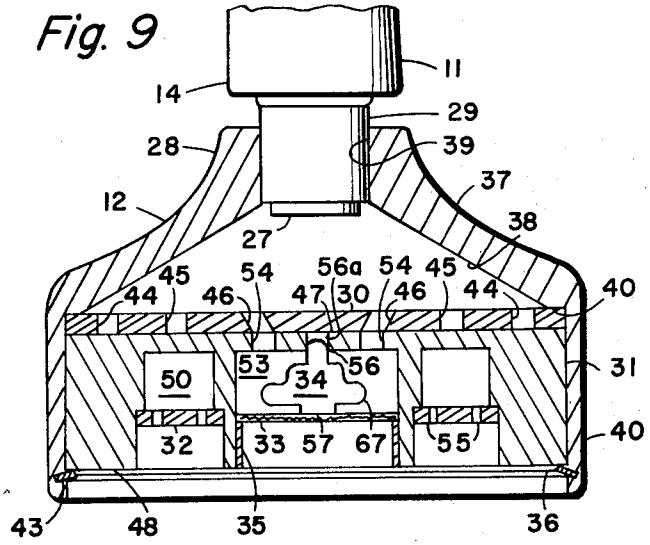
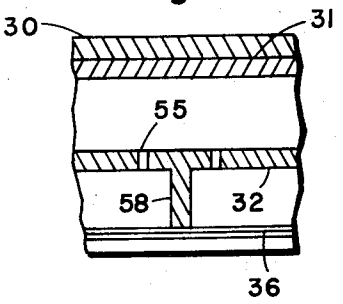


Fig. 10



INVENTOR.
William S. Carson
BY Roger L. Martin
ATTY.

SHOWER HEAD

This application is a continuation-in-part of my copending application, Ser. No. 41,950, filed June 1, 1970 now abandoned and entitled "Selective Multi-Flow Shower Head."

The invention relates in general to shower heads such as used for bathing purposes and more particularly to a shower head which has a rotary body portion that is equipped with manipulatable means for varying the form of water streams projected from the head.

Conventional shower heads have generally provided for the projection of but one form of water stream and variances in the stream are usually caused by manipulation of the control valve between the shower head and pressurized source of water. The stream, in such cases, normally takes the form of a plurality of individual streams that are discharged through suitable orifices in the head.

Body surface massaging is frequently recommended for people with certain types of physical ailments and it frequently happens that the person requiring the therapeutic treatment is incapable of massaging the body area requiring the treatment and also financially unable to afford the costs of labor involved for securing treatment.

The streams projected from conventional shower heads have little or no therapeutic massaging value and the present invention is directed to providing an improved shower head which has manipulatable means for varying the form of water streams projected by the head and wherein one of the stream forms provides a massaging action having therapeutic value.

A general object of the invention is to provide an improved shower head. A particular object of the invention is to provide a shower head which is capable of projecting more than one form of water stream and including a helical form of water stream that provides a massaging action when contacting the bathers body. Another object of the invention is to provide an improved shower head that is capable of projecting a water stream having a therapeutic massaging action and which is nevertheless adjustable to provide more conventional stream forms that are more adaptable for bathing purposes. Yet another object of the invention is to provide a shower head which is relatively inexpensive to manufacture and which can be used to provide a massaging action on the bather and selectively adjusted to project more conventional water stream forms for washing purposes.

The novel features which are believed to be characteristic of this invention are set forth with particularity in the appended claims.

The invention itself, however, both as to its organization and method of operation, together with further objects and advantages thereof, may best be understood by reference to the following description taken in connection with the accompanying drawings, in which:

FIG. 1 is a side elevational view of the shower head embodying the principles of the invention, with parts broken away to show the relationship of certain adjustable positionable parts that are shown at one position of adjustment enabling the projection of helical streams of water;

FIG. 2 is a plan view of the discharge end of the shower head as seen along the lines 2—2 of FIG. 1;

FIG. 3 is a sectional view of the shower head as seen along the lines 3—3 of FIG. 1, with certain parts broken away;

FIG. 4 is a transverse sectional view through the shower head shown in FIG. 1 as seen along the lines 4—4 thereof;

FIG. 5 is a sectional view of the shower head shown in FIG. 1 as seen in elevation along the lines 5—5 of FIG. 3;

FIG. 6 is a reduced size side elevational view of the shower head shown in FIG. 1 as seen when adjusted to project a generally hollow cylindrical multistream flow of water;

FIG. 7 is a cross sectional view in elevation similar to that of FIG. 5 but with the nozzle member adjusted to a position for projecting the hollow multistream flow of water shown in FIG. 6;

FIG. 8 is a reduced size side elevational view of the shower head as seen when adjusted to project a third form of water stream;

FIG. 9 is a cross sectional view similar to that shown in FIGS. 5 and 7 but with the nozzle member adjusted to project the stream depicted in FIG. 8; and

FIG. 10 is a section view through a fragment of the head as seen along the lines 10—10 of FIG. 2.

Reference is now made to the drawings and wherein the shower head is generally designated with the numeral 10 and shown as including a ball and socket-type fitting 11 and a body portion 12 that has an axis of symmetry 60. The fitting 11 provides universal movement of the body portion in a conical zone and is adapted for connection with a pressurized source of water, as for example to a threaded water distribution pipe (not shown) of a conventional household water supply distribution system. The body portion 12 is mounted for rotation about its axis 60 on the fitting component 11 of the shower head.

The fitting 11 includes a ball element 13, a socket element 14, an annular washer 15 and a hollow flanged cylindrical bushing 16 that is used in retaining the body portion 12 on fitting 11. The fitting has opposite ends 17 and 18 and is structurally equipped to provide a water passageway 19 that extends between the opposite ends of the fitting.

The socket element 14 has an internally threaded end 23 that adapts the element for connection with the pressurized source of water. The other end 24 of the socket element is enlarged to provide the socket area for the ball component 13 of the fitting. The washer 15 provides a pressure seal between the periphery of the ball element and the adjacent internal wall at the socket end 24 of element 14 and has an opening 25 that permits passage of the water into and ultimately through the ball element to the body 11 of the shower head.

The ball element 13 has a bore 20 that is enlarged at its discharge end so as to receive and accommodate the end of the bushing 16. This arrangement provides an internal shoulder 21 in the ball 13 and the bushing 16 is pressed fit snugly against the shoulder in the ball bore 20 in connecting the body portion 12 to the fitting 11. Bushing 16 has a hollow portion 26 that provides the discharge end of the fitting passageway 19 and the flange 27 of the bushing laps the cylindrical bushing element 29 of the body portion 12 in providing the

rotatable connection between the fitting **11** and body portion **12** of the shower head **10**.

The body portion **12** of the shower head includes a hollow casing **28**, the cylindrical bushing **29** which is fixed to the casing **28**, and a pair of members **30** and **31** that are relatively movable to adjust the form of stream which is projected from the shower head. The nozzle member **31** has certain recesses that will be subsequently referred to and is equipped with an annular orifice plate **32** which is provided with a plurality of holes or orifices **55** that provide one form of stream projection from the shower head. The nozzle member **31** is also equipped with a circular screen **33** and preformed water diverting member **34** that cooperate to provide an aeriated form of stream projection from the shower head.

The casing **28** has a converging end portion **37** which provides a reception chamber **38** for water discharged from the fitting **11** and this end portion **37** has an opening **39** in which the hollow cylindrical bushing **29** is pressed fit and mounted the rotation about the flange bushing component **16** of the fitting **11**. The other end portion **40** of the casing is generally cylindrical and provides an internal area in which the water distribution member **30** and nozzle member **31** are housed.

The water distribution member **30** is in the form of a flat disk and the cylindrical end portion **40** of the casing has an internal shoulder **41** against which the disk member **30** is seated in the assembled body portion. Here the end portion **40** of the casing has an internal protuberance **42** that fits in a matching notch **42a** at the periphery of the disk member **30** so as to prevent rotational movement of the disk.

The nozzle member **31** is a cylindrical metal element that also fits in the cylindrical end portion **40** of the casing and in a manner such that the upstream face **47** of the nozzle is flush against the downstream face of the disk member **30**. The members **30** and **31** are retained in the end portion **40** by means of a slit ring element **36** which fits in a circular groove **43** at the discharge end of the casing portion **40**. Here the ring **36** laps and bears against the downstream face **48** of the nozzle member so as to maintain facial contact between members **30** and **31**.

The water distribution disk member **30** has three sets of openings which are designated respectively at **44, 45** and **46**. The openings of each set are radially offset from the openings of the other sets in the arrangement depicted, and the openings of each set provide inlet ports or passages to separate water discharge channels in the nozzle member that can be selected for use by rotation of the nozzle to positions providing respectively different projected stream forms from the shower head.

One water discharge channel of the nozzle member is made up of three circumferentially spaced and generally inclined orifices **49** that extend between the faces **47** and **48** of the member **31**. A second water discharge channel in the member is formed by an annular recess **50** in the downstream face **48** of the member and three circumferentially spaced inlet openings **52** in the upstream face **47** and which communicate with the recess **50**. The annular recess **50** has an enlarged portion which provides an internal shoulder **51** in the nozzle member and which is adapted and arranged to accommodate the location of the annular orifice plate **32** within the recess. This orifice plate **32** is pressed fit in the recess of the nozzle member and is provided with suitable fins **58** that may be finger manipulated from the exterior of the body to rotate the nozzle member **31** into the proper position for the stream form selected.

The third water discharge channel in the nozzle is formed by a centrally located circular recess **53** in the downstream face **48** and by three cooperating axially converging inclined inlet openings **54** in the upstream face **47** that communicate with the recess **53**. This recess **53** houses the preformed water diverting member **34** and the circular screen **33** is generally seen in FIGS. **5, 7** and **9**. The diverting member **34** is made of resilient material in the embodiment shown and has an axially arranged protuberance **56** that fits in an appropriate hole **56a** at the base of the recess. The member is equipped with a flat surface **57** which bears against the circular screen **33** in the recess. The screen **33** is maintained in place by a hollow cylindrical retaining ring **36** that is pressed fit in the recess in facial contact with and along the perimeter of the screen member.

As previously indicated, the members **30** and **31** are relatively movable so as to provide a valving action that permits the user to select the form of water stream desired. In the embodiment illustrated, the nozzle member **31** is rotatably movable with respect to member **30** about the axis **60** by the finger manipulation of the fins **58** that are located in the nozzle recess **50**.

The holes **44, 45** and **46** provide passages that are in communication with the reception chamber **38** and hence also with the passageway **19** of the ball and socket fitting **11**. The sets of holes **44, 45** and **46** in the distribution member **30** serve as water passages to the respective discharge channels in the nozzle member **31**. As seen in FIG. **3**, the respective sets of holes **44, 45** and **46** are generally centered on concentric circles that are designated at **61, 62** and **63** and in an arrangement where each hole of the respective sets is angularly spaced apart, by an angle of 120°, from the other holes in its set and in a grouped arrangement where the holes of each group are offset from the body axis **60** and radially align and spaced apart from the holes of the other sets in the grouped arrangement.

As for the rotatably adjustable nozzle member **31**, the inlet ends **59** of the inclined orifices **49**, and the inlet openings **52** and **54** of the channels that includes recesses **50** and **53** are also generally centered on concentric circles, designated at **64, 65** and **66** in FIG. **4**. This provides a working arrangement for the flow of water through the distribution disk **30** and into the channel selected by the user through rotation of member **31**. In contrast to the grouped radially aligned arrangement used in the distribution disk, the inlet openings **59, 52** and **54** are angularly displaced in the grouped arrangement provided in the nozzle. Thus, the inlet opening **52** in the grouped arrangement provided in nozzle **31** are angularly displaced from the inlet ends of the inclined orifices **49** by the angle A_1 from the inlet openings **54** by the angle A_2. As will be apparent to those skilled in the art, this arrangement enables the user to rotate the nozzle member **31** about the axis **60** of the body to any one of three positions that enables

the water in the chamber **38** to pass through both of the members **30** and **31** but nevertheless through only one of the three channels of flow provided in the nozzle member **31**, depending on the position selected.

Reference is now made to FIGS. **1** through **5** and wherein the nozzle member **31** is shown at a first position that provides for the passage of the water through the inclined orifices **49**. In this position the inlet ends **59** of the orifices **49** are in working alignment with the passages provided by the openings **44** of the first set of openings in the distribution disk **30**. Under such circumstances, and by virtue of the angularly displaced arrangement of the inlet openings **52** and **54** in the grouped arrangement shown in FIG. **4**, the passage of water through openings **45** and **46** into the distribution channels involving recesses **50** and **53** respectively is obstructed by the upstream surface **47** of the nozzle member.

In FIGS. **6** and **7** the nozzle member is depicted as being in a second position at which the openings **45** of the second set of openings in the distribution disk **30** are in working alignment with the inlet openings **52** of the distribution channel that involves the annular recess **50**. Under these circumstances, the passage of water through the openings **44** and **46** into the orifices **49** and recess **53** is obstructed by the upstream surface **47** of the nozzle so that a generally cylindrical multistream flow of water is projected from the head through the openings **55** in the annular orifice plate **32**.

Reference is now made to FIGS. **8** and **9** wherein the nozzle is shown in a third rotated position at which the axially converging openings **46** of the third set in the distribution disk **30** are in working alignment with the three openings **54** in the nozzle member **31**. In this arrangement, the passage of water through openings **44** and **45** is obstructed by the upper surface **47** of the nozzle member and the flow of water is through the recess **53**. As previously indicated, the recess **53** houses screen **33** and a preformed water diverting member **34**. Member **34** has a centrally located circular flange **67** and as the water flows through the recess **53** a slight vacuum is created underneath the flange **67** that causes air to be sucked in through the screen and to become mixed with he water passing through the recess. This causes an air-water mixture to be projected from the screen **33** and provides an aeriated stream of water to be projected from the head as depicted generally in FIG. **8**.

Reference is again made to the arrangement depicted in FIGS. **1** through **5**. As best seen in FIG. **1**, the orifices **49** in nozzle member **31** are obliquely arranged with respect to the body axis **60** so that as water passes through the orifices **49** reactive rotary motion is imparted to the body member **12** and which causes the body member to rotate about the axis **60** as in the direction indicated by arrow **68** in FIG. **1**. This results in the projection from each orifice **49** of a substantially solid stream of water that takes on a generally helical pattern of flow from the head **10** and provides a forceful massaging action on the body area of the user which is contacted by the stream.

As the orifices rotate they generally define a circle in the plane **69** of the downstream face **48** of nozzle member **31** and in practice, it has been found that the best massaging action is secured when the orifices **49** project the stream in a plane which is substantially perpendicular to the plane **69** of rotation of the orifices and substantially tangentially to the circle defined in the plane **69** during their rotation with the body portion and at an angle B to the plane **69** of rotation which is between 55° and 80°.

While only certain preferred embodiments of this invention have been shown and described by way of illustration, many modifications will occur to those skilled in the art and it is, therefore, desired that it be understood that ii is intended herein to cover all such modifications as fall within the true spirit and scope of this invention.

What is claimed as new and what it is desired to secure by Letters Patent of the United States is:

1. A shower head comprising a fitting having opposite ends and a water passageway extending therebetween, and a body portion rotatably mounted at one of said opposite ends for rotation about an axis of the body portion; said fitting being adapted at the other of its opposite ends for connection with a pressurized source of water, said body portion being arranged to receive the water effluent from said passageway and including a pair of cooperating members which are relatively movable between first and second relative positions and which comprise a nozzle member having a water discharge channel and at least one discharge orifice that is radially offset from said channel and said axis, and a water distribution member having a first water passage arranged to communicate at the first relative position for the members with the fitting passageway and said discharge orifice, and a second water passage arranged to communicate at the second relative position for the members with the fitting passageway and said water discharge channel, said distribution and nozzle members being arranged at said first relative position to obstruct passage of water through said discharge channel, said distribution and nozzle members being arranged at said second relative position to obstruct passage of water through said discharge orifice, and said discharge orifice being obliquely arranged with respect to said axis so that water passing therethrough imparts reactive rotary motion to said body member and provides a generally helical stream of projected water.

2. A shower head in accord with claim **1** where said nozzle member is mounted for rotatable movement about said axis between said first and second relative positions for the members and finger manipulatable from the exterior of said body member to adjust the members to a selected one of said relative positions.

3. A shower head in accord with claim **2** where the first water passage of said water distribution member is radially offset from said axis and where the second water passage of said water distribution member is radially offset from said axis.

4. A shower head in accord with claim **1** where said discharge orifices project said stream in a plane substantially tangentially to the circle defined by the discharge orifice during rotation of the body portion and substantially perpendicular to the plane of rotation thereof and at an angle to the plane of rotation of between 55° and 80°.

5. A shower head comprising a ball and socket-type fitting having a water passageway, and a body portion

rotatably mounted on the fitting for rotation about an axis of the body portion; said fitting being adapted for connection with a pressurized source of water, said body portion being arranged to receive the water effluent from said passageway and including a hollow casing, a nozzle member mounted in the hollow of the casing for rotation about said axis, and a water distribution member fixed in the hollow of said casing at the upstream face of said nozzle member; said nozzle member having a first water discharge channel which includes at least one discharge orifice that is radially offset from said axis, a second water discharge channel that is radially offset from said axis and from said first water discharge channel, and a third water discharge channel, said nozzle member being rotatably movable between a first position, a second position and a third position, said water distribution member having a first water passage arranged to communicate at the first position with the fitting passageway and said first discharge channel, a second water passage arranged to communicate to the second position with the fitting passageway and said second discharge channel, and a third water passage arranged to communicate at the third position with the fitting passageway and said third discharge channel; said distribution and nozzle members being arranged at said first position to obstruct passage of water through said second and third discharge channels, said distribution and nozzle members being arranged at said second position to obstruct passage of water through said first and third discharge channels, said distribution and nozzle members being arranged at said third position to obstruct passage of water through said first and second discharge channels, and said discharge orifice being obliquely arranged with respect to said axis so that water passing therethrough imparts reactive rotary motion to said body member and provides a generally helical stream of projected water, said second discharge channel having orifice means mounted therein and providing at said second position a multiplicity of streams that are projected generally parallel to said axis, and said third channel having means delivering an aeriated stream of water from said body portion at said third position for said members.

* * * * *