Nov. 7, 1950 A. M. MOEN 2,529,223

SHOWER HEAD

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Fig. 1

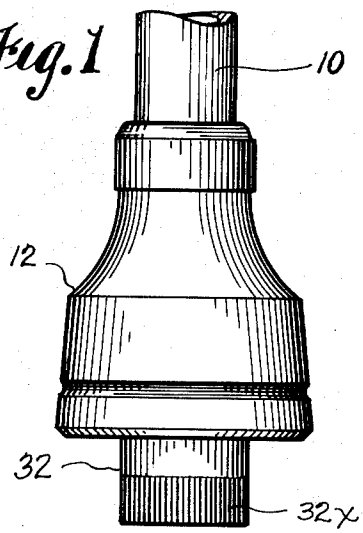


Fig. 2

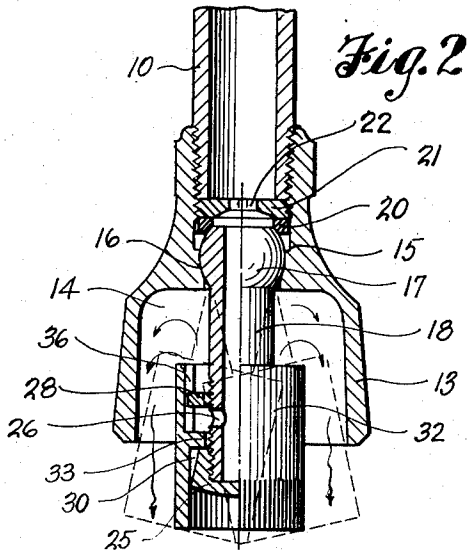


Fig. 3

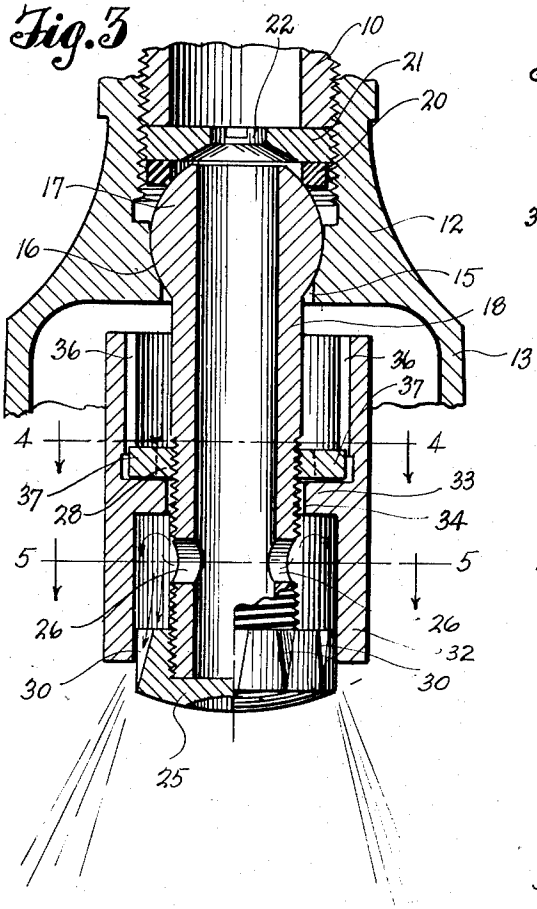


Fig. 4

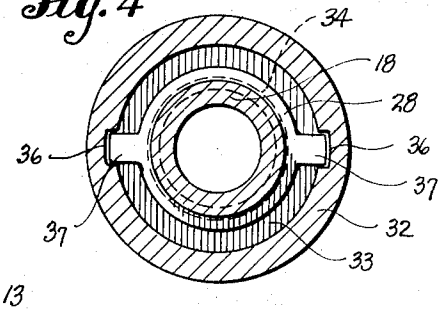
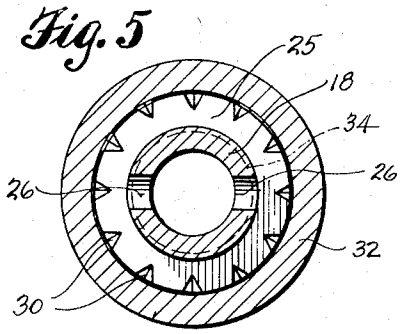


Fig. 5



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Fig. 6

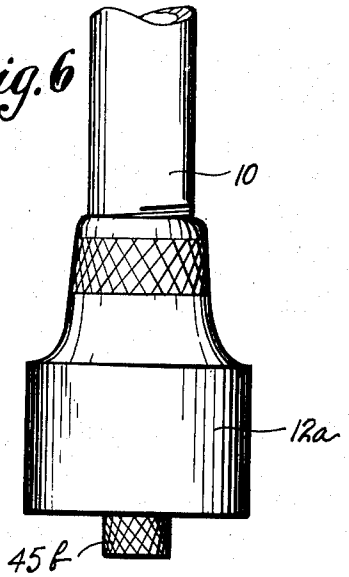
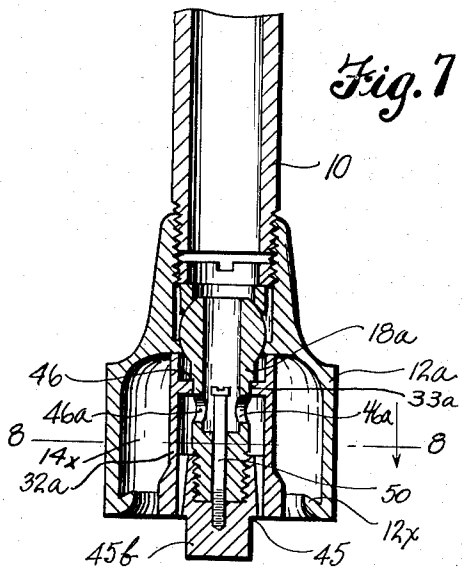


Fig. 7



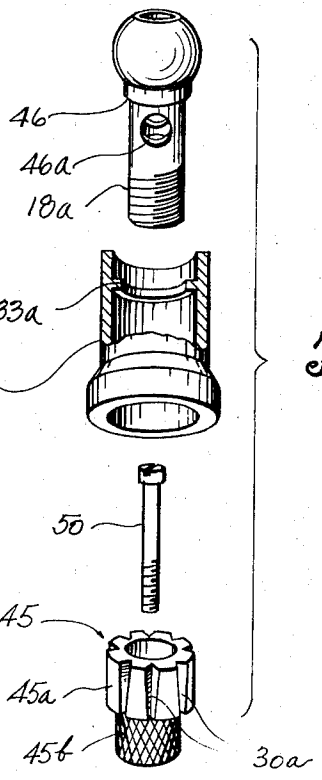


Fig. 9

Fig. 8

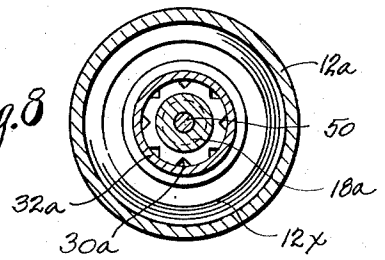
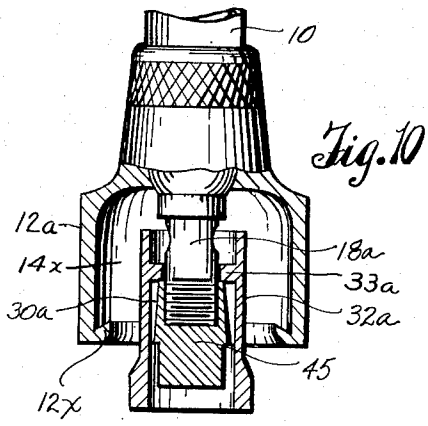


Fig. 10



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SHOWER HEAD

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Application July 8, 1946, Serial No. 682,059

4 Claims. (Cl. 299—132)

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This invention relates to shower heads, and it has reference more particularly to improvements in shower heads designed for shower bath uses; it being one of the principal objects of the invention to provide a shower head characterized by means therein that automatically effects such change in relationship of the spray producing parts whenever the flow of water under pressure to the spray head is shut off that, when again turned on, the water will flow easily from the head and without producing spray, thus to eliminate the possibility of shock or injury to the user by too hot or too cold a spray, and to permit easy testing of the water temperature.

Another of the principal objects of the invention is to provide a shower head embodying the safety feature above mentioned and wherein the spray producing parts may be easily and quickly readjusted to change the easy flowing stream of water to spray, and whereby the fineness of the spray may be changed at will without change in amount of flow of water.

Another object of the invention is to provide a spray head embodying the safety features and provision for spray control above mentioned, and which also may be readily adjusted to change the general direction of delivery of the spray within certain limits.

A further object of my invention is to provide a shower head in which the fineness of the spray as delivered therefrom is determined by the relationship of a fixed head and a movable cap or sleeve that is applied adjustably thereover and adapted to be sustained by the pressure thereagainst of flowing water, in spray producing relationship to the head, and is adapted to move under its own weight, whenever the sustaining pressure of flowing water is cut off thus to automatically effect a relationship of parts at which the pressure of flowing water, when again delivered to the head, will hold the sleeve in such position relative to the head that the water will be caused to flow from the head in a gentle, downward stream permitting its temperature to be tested without discomfort or danger to the user.

Still further objects and advantages of the invention are to be found in the details of construction of parts embodied in the device, in their assembled relationship and use, as will hereinafter be fully described.

In accomplishing the above mentioned and other objects of the invention, I have provided the improved details of construction, the preferred forms of which are illustrated in the accompanying drawings, wherein—

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Fig. 1 is an elevational view of a shower head embodying the novel features of the present invention therein.

Fig. 2 is a central, longitudinal section of the same, indicating in dotted lines, the adjustment of the spray head provided for changing the direction of delivery of spray.

Fig. 3 is an enlarged, sectional detail of parts, showing a relationship of spray head and cap for spray delivery.

Fig. 4 is a horizontal section taken on line 4—4 in Fig. 3.

Fig. 5 is a horizontal section taken on line 5—5 in Fig. 3.

Fig. 6 is an elevational view of a shower head of an alternative form and embodying novel features of the present invention therein.

Fig. 7 is a central, longitudinal section of the device of Fig. 6.

Fig. 8 is a horizontal section taken on line 8—8 in Fig. 7.

Fig. 9 is a perspective view of parts embodied in the shower head assembly of the device of Fig. 7, shown in a disassembled relationship for better understanding of construction.

Fig. 10 is a sectional detail of a shower head of a modified form.

Referring more in detail to the drawings—

In the several views, 10 designates the end portion of a pipe through which water may be delivered under pressure to the shower head. It is anticipated that the pipe 10 will lead from pipe connections through which hot water and cold water may be furnished to the head in desired proportionate amounts, and also that the flow of water to the head through pipe 10 will be under control of a manually operable valve, or valves, not herein shown, for regulating or entirely cutting off the flow of water.

In the shower head which has been illustrated by Figs. 1 to 5 of the drawings, the pipe 10 is shown as being threaded into the upper end of a bell-shaped housing 12 which has a depending, substantially cylindrically formed skirt portion 13 defining a downwardly opening chamber 14. Formed through the closed upper end or base wall of this housing, is a coaxial passage 15 which, at its lower end, opens into the chamber 14. This passage is formed, near its lower end, with a spherically rounded and upwardly faced seat 16 against which the spherically rounded head portions 17 of a downwardly directed pipe nipple 18 is seated for limited pivotal adjustment of the nipple, as indicated by the dotted line showing of parts in Fig. 2.

Seated against the upper surface of the spherical head 17 is a sealing gasket 20 of fiber or other suitable material, and threaded into the passage 15 and firmly against the gasket, is a retaining nut 21 which has a central passage 22 for flow of water therethrough. The pipe 10 is threaded into the upper end of the passage 15 of the housing 12 and because of tapered threads, will not contact nut 21.

The connection as described and shown, provides for flow of water from pipe 10, through passages 22 and directly into the pipe nipple 18. The ball and socket joint permits limited directional adjustment of the nipple to be made without leakage at the connecting joint.

The nipple 18 is exteriorly threaded for a substantial distance upwardly from its lower end, and a spray head member 25 is threaded tightly onto the lower end of the nipple. This spray head member 25 is in the nature of and serves additionally as a cap whereby the lower end of the nipple is closed. A short distance above the member 25, the nipple is provided with a plurality of lateral openings 26 for the out flow of water, and threaded onto and adjustable along the nipple, above these lateral openings 26, is a stop nut 28 for a purpose presently apparent.

The spray head member 25 has a circular body portion with a cylindrically curved outer surface that is formed at regularly spaced circumferential intervals with longitudinal grooves 30, of V-shaped cross-section and which gradually decrease in area from their upper to their lower ends, as will be understood by reference to Figs. 3 and 4. In the present instance, I have shown the spray head as having twelve of such grooves 30, but this number may be increased or decreased as desired or required.

Disposed coaxially of and about the nipple and spray head, as shown in Figs. 2 and 3, is a tubular sleeve-like member 32, open at upper and lower ends and provided intermediate its ends with a partition wall 33 formed with a central opening 34 which closely contains the nipple therein, but not with interference to easy longitudinal movement of the sleeve. The lower end portion of the sleeve fits closely about the spray head member 25 but also with freedom of movement, and the upper portion of the sleeve encloses the nut 28 therein and is formed, from the partition wall to the upper edge, with longitudinal channels 36—36, as seen in Fig. 4, in which lugs or radial arms 37—37 that are formed on the stop nut 28, are slidably contained, thus to provide a connection between the sleeve and nut whereby the latter may be rotated to adjust it upwardly or downwardly on the nipple.

It is shown in Fig. 2 that in one position of the sleeve, which I will refer to as water testing position, it is supported by the seating of the partition wall 33 upon the upper end surface of the spray head 25. Also, it is therein shown that when the sleeve is so supported, the partition wall thereof is below the level of the nipple outlets 26—26 and therefore, when water is admitted to pipe 10, and to the nipple 18, it will be discharged from the nipple outlets 26—26 into the upper end portion of the sleeve and from this, will be discharged into the upper end of the housing chamber 13 and will then be diverted downwardly from the relatively large chamber 14 in an easy downward flow, permitting the testing of the water for temperature without danger or discomfort to the user. By reference to Fig. 2, it will be understood that there is substantial clearance between the sleeve 32 and outer wall of the chamber 13 and no spraying or gushing effect of outflowing water will be produced.

To change this outflow of water from an easy falling stream to a spray, it is only required that the sleeve 32 be manually lifted to an extent that its partition wall 33 will be above the level of the nipple outlets 26—26, whereupon the force of water, as discharged from the outlets 26 into the sleeve, will act against the wall 33 to lift and hold it against the stop nut 28. The discharge of water from the sleeve then will be from its lower end and through the several channels 30 of the spray head member 25, and the character of the spray as then delivered, will be dependent upon the effective size of the outlets of the channels as provided by the relative position of the lower end of the sleeve and the spray head; it being understood that the spray may be made finer or coarser by closing off more or less of the length of the channels, through the longitudinal adjustment of the sleeve.

While the spray is thus being discharged from the head, the sleeve will be held by the force of the water, at its upper limit of adjustment, as determined by the instant setting of the stop nut 28. If it should be decided to produce a finer spray than that for any particular setting of the sleeve, the user merely rotates the sleeve in a manner whereby the stop nut will be threaded downwardly on the nipple. If a coarser spray is desired, the sleeve is turned in the direction that causes the stop nut to be moved upwardly on the nipple; it being understood that the arm and slot connection between the sleeve and nut shown in Fig. 4, provides for this adjustment of the nut merely by the manual rotation of the sleeve, and that the extent to which the spray head channels will be uncovered is controlled or determined by the position of the nut on the nipple.

An important feature of this construction is that whenever the water pressure to pipe 10 is turned off, the sustaining pressure to the sleeve is removed and the sleeve 32 will drop on the nipple to the relative position of Fig. 2. Therefore, when water is again turned on, it will emerge from the chamber 13 in a gentle downward flow and not from the head as a spray. This is the insurance to the user against injury or discomfort from a too hot or too cold water spray.

To facilitate the easy rotation of the sleeve 32 for changing the character of the spray as discharged from the spray head, the sleeve 32 is roughened or knurled about its lower end portion, as has been shown at 32x in Fig. 1. Also, it is shown in Fig. 1 that when the water is turned off or while being tested, a substantial portion of the sleeve will be exposed below the housing 12 and thus it is easily accessible for this adjustment. Also, the knurled portion of sleeve 32 is designed to be accessible while the spray is flowing, thereby permitting the user to adjust the spray without having to reach into the spray to do so. The sleeve 32 is clearly visible and in event of its failure to drop, it would be noticed by the user.

The ball and socket mounting of the nipple 18 permits a certain range of directional adjustment of the spray head shown in dotted lines in Fig. 2, that is desirable.

In the alternative form of device shown in Figs. 6 to 9, the water supply pipe 10 is threaded into a housing or bell 12a similar to the housing 12 of the device of Fig. 1, but formed interiorly about the lower end of the skirt portion with an inwardly and upwardly turned flange 12x that fur-

ther breaks up the force of any outflow of water directly from the housing chamber **14***x*. Furthermore, in this device, a nipple **18***a* is mounted in the housing in the same manner as is the nipple **18** shown in Fig. 2 and this has a closed lower end onto which a spray nut **45** is threaded for limited adjustment in the longitudinal direction of the nipple.

The spray nut **45** has a cylindrical body **45***a*, shown best in Fig. 9, and a reduced downwardly extending shank **45***b* that is knurled for a better turning grip thereon. The cylindrical surface of the body **45***a* is formed with longitudinal, downwardly tapered slots **30***a* like the slots **30** in the spray head **25** of the device of Fig. 3.

The nipple **18***a* has a downwardly facing annular shoulder **46** near its ball end and below this are lateral outlets **46***a* from the nipple passage for the discharge of water.

Surrounding the nipple and nut **45** is a sleeve **32***a* and this is open at upper and lower ends and is formed within its upper end portion with a dividing partition wall **33***a* provided with a central opening through which the nipple freely extends. The sleeve is limited in its upward movement relative to the nipple by the wall **33***a* engaging against the nipple shoulder **46** and it is limited in its downward movement on the nipple by the wall **33***a* seating against the upper end of the adjustable nut **45**. The manner of supporting the sleeve permits it to be manually lifted from the lower, or testing position to the full line position at which water delivered from the nipple outlets **46***a* will be discharged as spray from the spray head channels.

When water pressure is cut off, the sleeve will drop to its lower limit. Then, when again turned on, it will be discharged from the upper end of the sleeve into the bell chamber, then deflected downward and again its flow broken up by contact with the flange **12***x*.

The change in character of the spray in this device is made by turning the nut **45** to adjust it upwardly or downwardly relative to the position of the lower end of the sleeve when the sleeve is in its lifted position.

To prevent unthreading of the nut **45** completely from the nipple, a screw bolt **50** is extended downwardly and through a hole formed in the closed lower end portion of the nipple and is fixed in the nut. The head of the screw limits the downward adjustment of the nut to prevent disconnection.

The device shown in Fig. 10 is like that of Fig. 7 except that the nut **45** is not equipped with the bolt **50**.

Having thus described my invention, what I claim as new therein and desire to secure by Letters Patent is:

1. A shower head comprising a vertically directed pipe element formed with a lateral port through which water supplied to the pipe element under pressure may be discharged, a sleeve, open at its ends, slidably mounted about the said pipe element, across the said lateral port and providing a water discharge passage between them, an annular wall formed within the sleeve intermediate its ends and substantially closing off the water discharge passage at that location, a lower stop on the pipe element for limiting the downward movement of the sleeve at a position at which the said annular wall will be below the discharge port and water from the port will be diverted to and discharged from the upper end of the sleeve, and upper stop on the pipe element for limiting the upward movement of the sleeve at a position at which the said annular wall will be above the said discharge port and water from the port will be diverted to and discharged from lower end of the sleeve; and means fixed on the pipe element and coacting with the lower end portion of the sleeve to convert water that is discharged at that end into spray; said sleeve being adapted to be manually lifted from its lower to its upper limit and then to be held at its upper limit by pressure of water against the under side of said annular wall therein, and to drop by gravity when water pressure is discontinued.

2. A shower head comprising a vertically directed pipe element formed with a lateral port through which water supplied to the pipe element under pressure may be discharged, a sleeve open at its ends, slidably mounted about the pipe elements, across the said lateral port and providing a water discharge passage between them, an annular wall formed within the sleeve intermediate its ends and substantially closing off the water discharge passage at that location, a spray head applied about the lower end of said pipe element, and serving as a stop for limiting the downward movement of the sleeve at a position at which the said annular wall will be below the said discharge port and water from the latter will be diverted to and discharged from the upper end of the sleeve, an upper stop on the pipe element against which the sleeve may be manually lifted and whereby its upward movement will be limited at a position at which the said annular wall will be above the said lateral port and water from the port will act thereagainst to hold the sleeve in lifted position and will be diverted to and discharged from the lower end of the sleeve and converted into spray by said spray head.

3. A shower head as recited in claim 2 wherein the said upper stop is adjustable along the pipe element to permit upward movement of the sleeve to more or less extent, and said spray head is formed with spray producing channels that may be uncovered by the sleeve when in its upper limit, to more or less extend in accordance with the adjustment of said upper stop.

4. A shower head as recited in claim 1 wherein the upper stop comprises a nut that is threaded on the said pipe element for adjustment therealong and wherein the said sleeve is formed with a longitudinal keyway receiving a portion of the nut therein, providing for rotatable adjustment of the nut through the mediacy of the sleeve.

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