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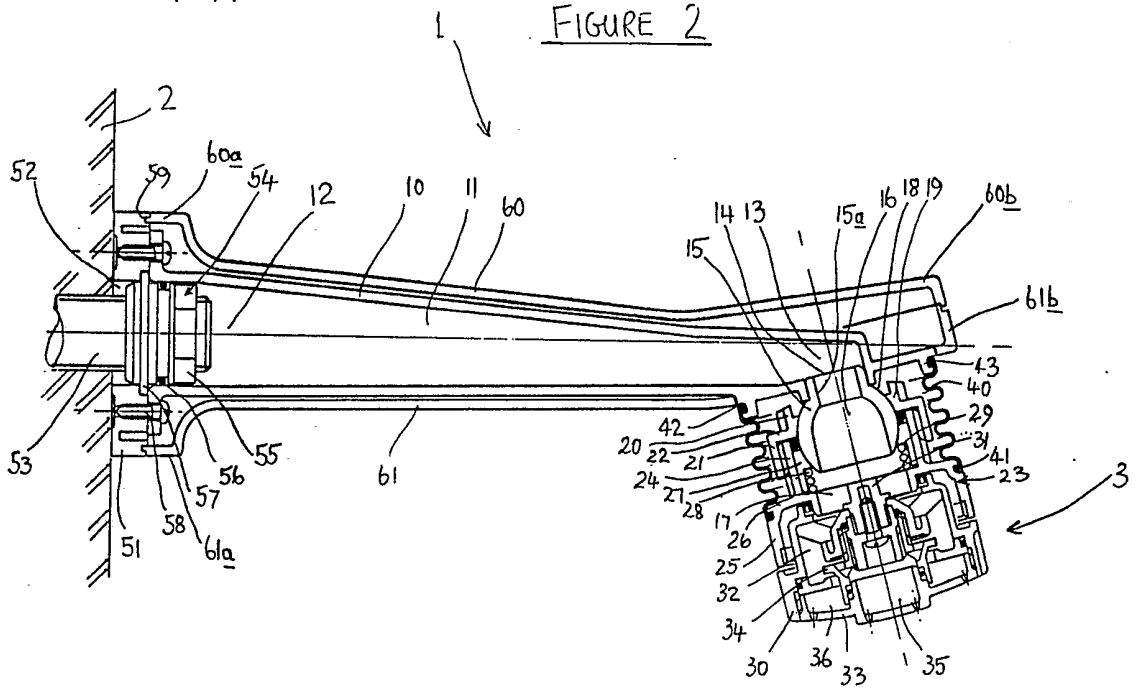
(54) Shower fitting for ablutionary purposes

(57) The invention concerns a shower fitting 1 mounting a spray head 3 which is arranged for swivelling movement to vary the trajectory of the water spray. The fitting comprises a hollow body 10 providing a waterway 11 with an offset outlet port 14 into which swivel member 15 with a water throughway 16 is mounted. The part-spherical member 15 is engaged by opposed support mountings 19 and 27 and a spring 28 acts on mounting 27 to urge the mountings together in sealing engagement with the member 15. The spray head 3 has a housing 23 with opposed flanges 24,25 of which the inner flange 24 is associated with the support mountings 19 and 27 whilst the outer flange 25 mounts an adjustable spray mechanism. The swivel member 15 and associated mountings 19 and 27 are enclosed by a sleeve-like bellows 40 which is flexible and both protects, covers and safeguards the swivel assembly whilst permitting such swivelling of the spray head 3. Various other features relating to the mounting fixture, and alternative forms of spray plate are described.

FIGURE 2



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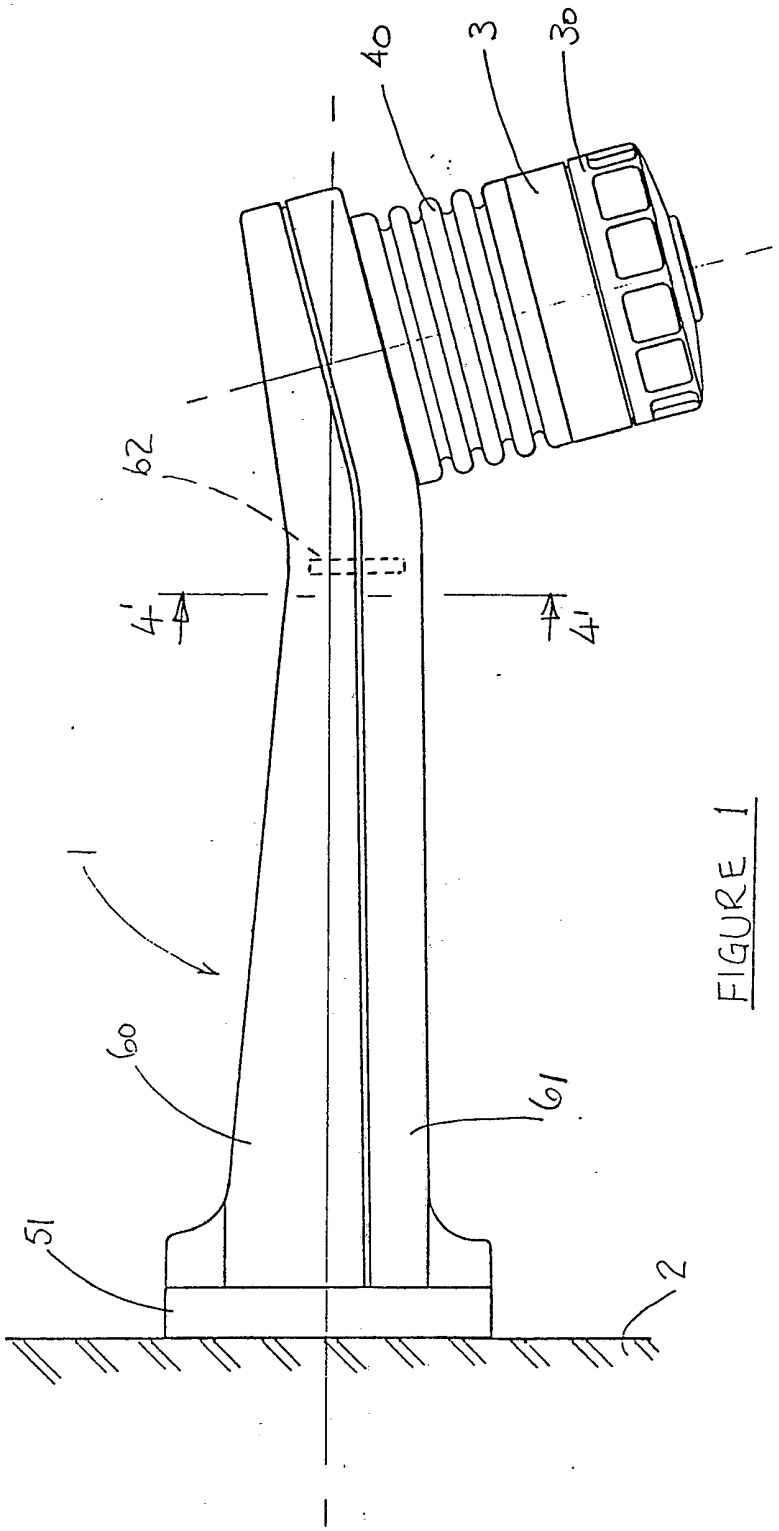

FIGURE 1

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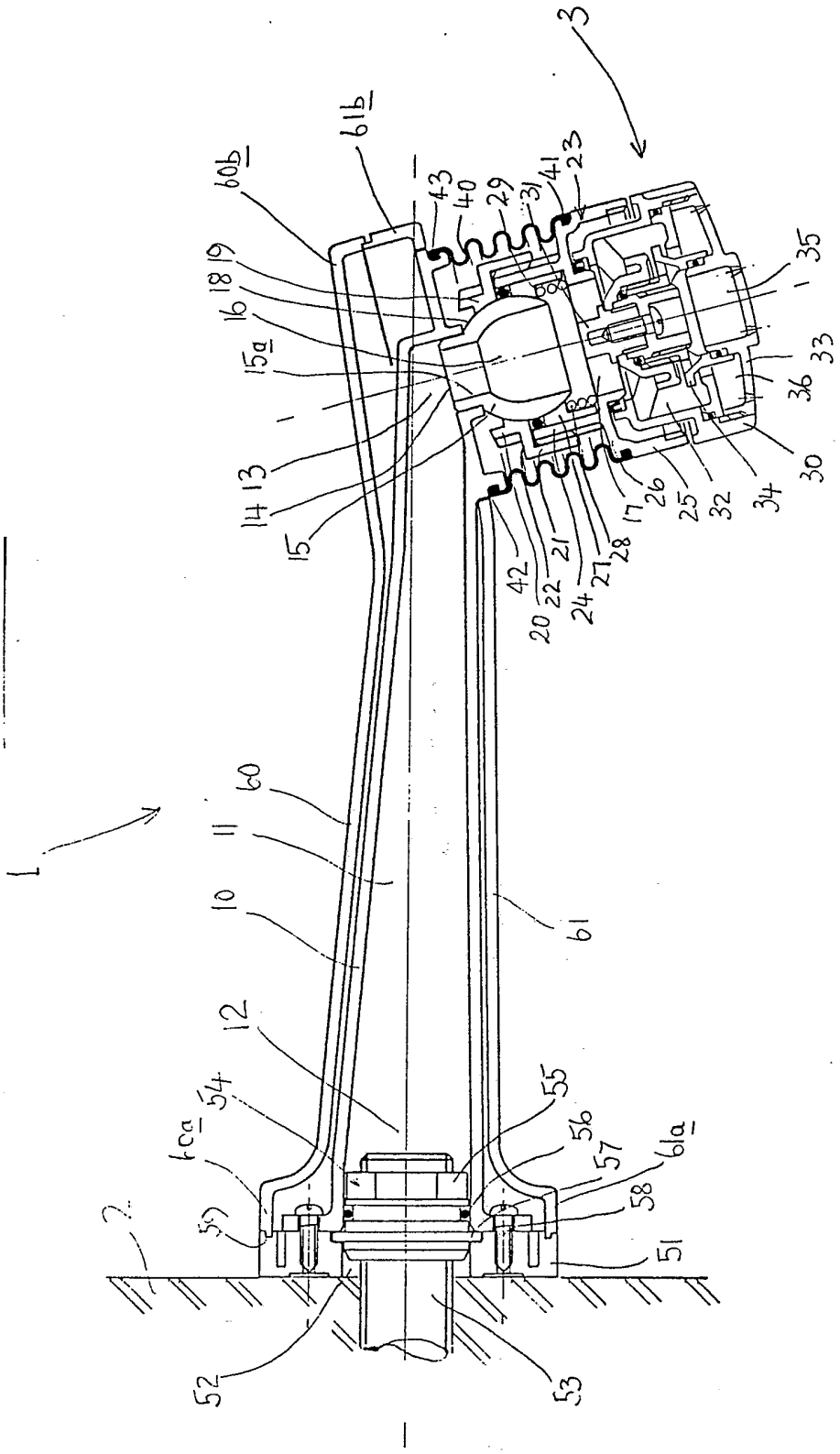
FIGURE 2



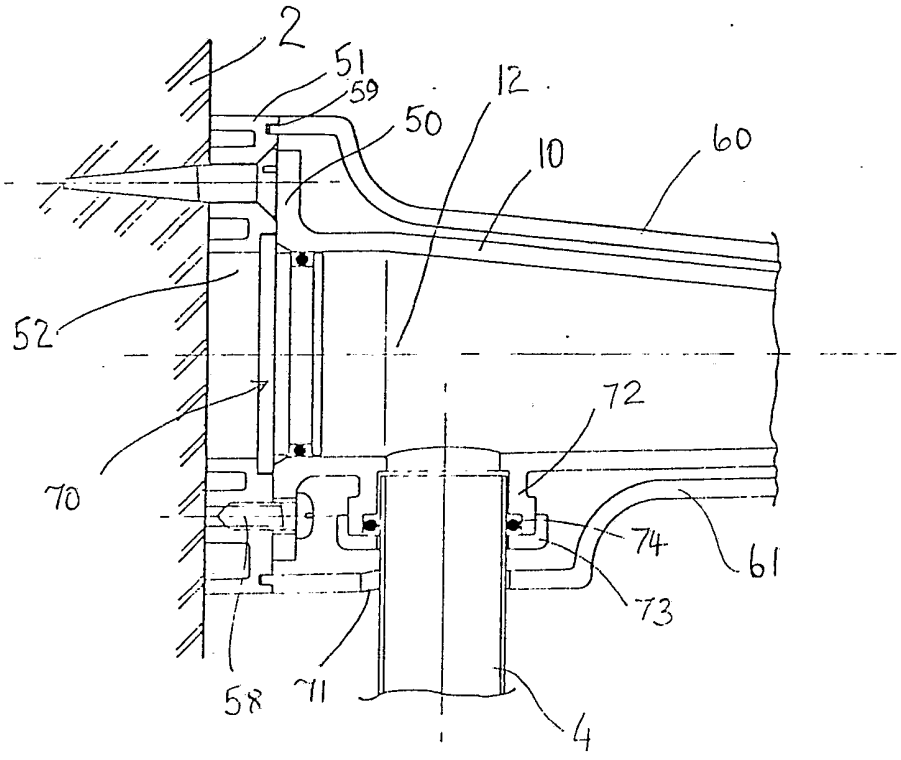


FIGURE 3

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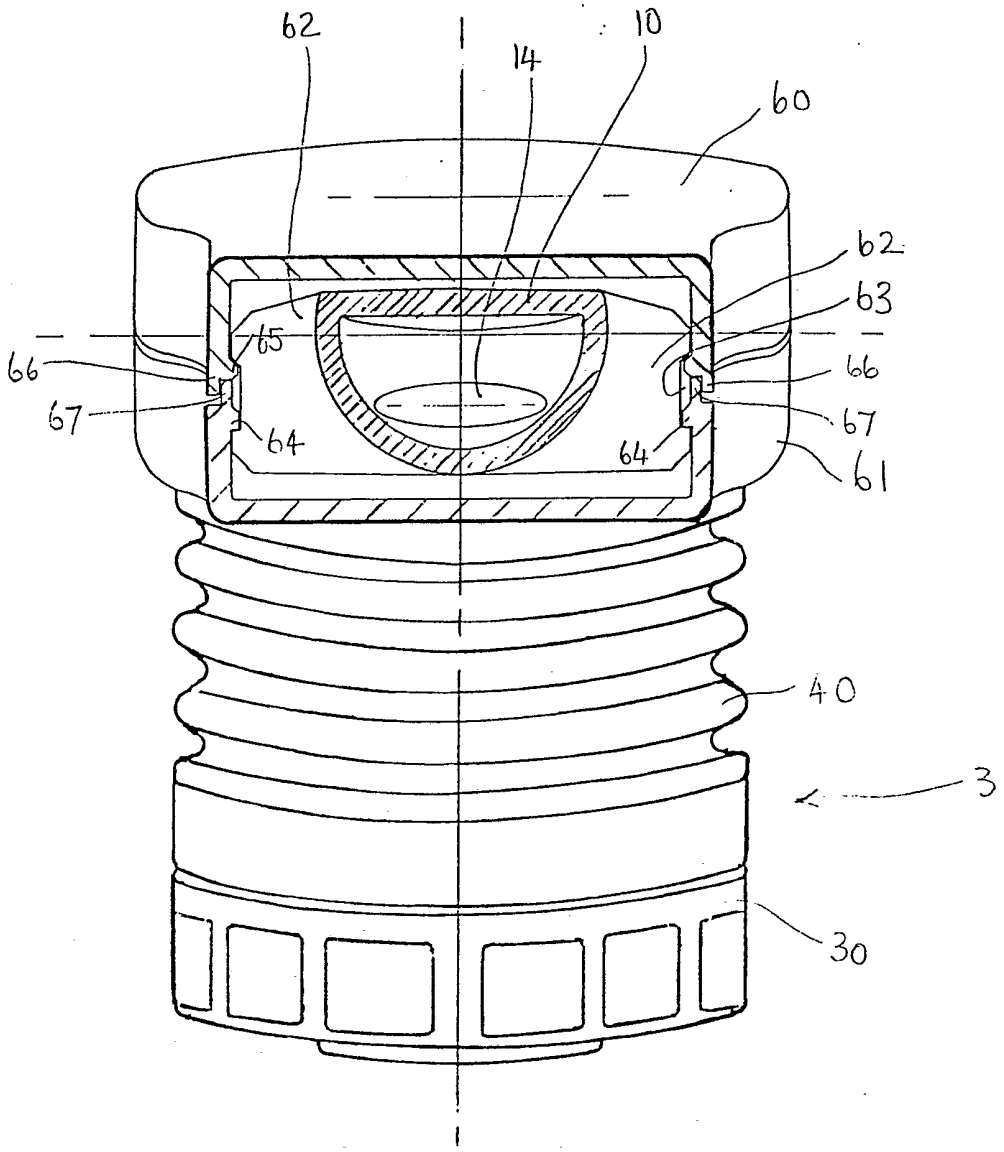
FIGURE 4



SPECIFICATION

Shower fitting for ablutionary purposes

This invention relates to a shower fitting for ablutionary purposes and is particularly concerned with a shower installation of the type, commonly referred to as a fixed shower, wherein a shower fitting mounting a spray head for discharge of water is connected to a fixed water supply pipe and the fitting is secured to a substantially rigid structure.

Such shower fittings are dissimilar in many respects to the common type of shower in which a handset mounts the spray head with the handset being connected to the water supply pipe through a flexible hose so that the handset can be held by the user to direct the spray in any desired direction only limited by the length of the flexible hose.

Fixed shower installations are commonly used in institutions wherein the spray head is rigidly supported and mounted to the riser pipe. In such fixed shower installations there is no intention for the user to be able to adjust the trajectory of the spray discharged by adjusting movement of the spray head.

In other fixed shower installtions, the spray head is mounted for adjusting movement, and this is commonly done by providing some form of swivel or pivoting gland coupling in the water supply pipe or the connection to the water supply pipe. Most of these adjustable arrangements are very poor aesthetically as well as in service performance where the water connections are exposed and liable to failure of any seals due to the effects of water and temperature as well as scale build up or other detritus and debris present in the water.

Additionally, in some known adjustable shower fittings, it is necessary to make the adjustment by use of a clamping device, such as a clamp screw which merely holds the spray head in a position by frictional engagement and which a user cannot easily manipulate whilst using the shower.

It is an object of this invention to provide a shower fitting for a fixed shower installation which obviates the problems whilst providing for a range of adjustments for the direction of the water spray.

It is a further object of this invention to provide an improved construction of a shower fitting for a fixed shower installation wherein the component parts are both shielded and protected in an effective manner.

Another object of this invention is to provide a shower fitting with adjustment of the spray head and having a construction suitable for manufacture in plastics materials that are corrosion resistant and resistant to adverse affects of water and temperature variations.

Yet another object of this invention is to provide an adjustable shower fitting that is simple to install.

Other objectives of this invention will be derived from explanations and description given later herein with reference to exemplary embodiments of the invention.

According to this invention, we provide a shower fitting with a spray head for a fixed shower installation for ablutionary purposes, the fitting comprising a mount for securing to a fixed structure and for mounting a hollow elongate body having an inlet for connection to a water supply pipe, the body defining a waterway to an outlet remote from the inlet, a swivel member mounted in the outlet and having a waterway therethrough to conduct water from the outlet to a spray head for spray discharge, the swivel member having an outer part-spherical surface on which support means for the spray head is mounted in sealing engagement for swivelling movement of the spray head relative to the body, and flexible bellows means of convoluted hollow cylindrical form extending between the body and the spray head both to enclose the swivel member and support means and to enable such swivelling movement.

With this invented form of shower fitting, the desired adjustment of the spray head can be achieved whilst all of the support means and the swivel connection with associated waterway are enclosed and protected by the flexible bellows extending between the body and the spray head. The bellows permit a wide range of relative movement between the spray head and the body by the provision of the convoluted form of the bellows.

Preferably, the inlet end of the body is provided with means for supporting the body to the mount for securing the fitting to a fixed structure, such as a wall or partition.

The body may have a flange at the inlet end for securing to a base plate of the mount. In a lead-through installation where the water supply pipe is within or behind the fixed structure, the mount and inlet end of the body encloses a gland connection to the water supply pipe.

In an exposed pipe installation, the pipe may extend through a lateral inlet at the inlet end of the body with the body having the flange for securing to the base plate of the mount.

By this preferred arrangement, the fitting and connection of the shower fitting to a supply pipe, whether exposed or not, can be simplified as well as providing a neat and compact assembly.

It is also preferred that the shower fitting further comprise trim members that are arranged to enclose the body and cover the mount securing the body to a fixed structure.

By providing such trim members, it is possible to style or suite the shower fitting either by colour or configuration whilst maintaining the basic construction therewithin without design change. Thus, a wide range of styles or design can be provided by merely changing

the type of trim members.

For supporting the spray head on the swivel member, it is preferred that the support means comprises two opposed support members with each having seating faces for respective engagement with the swivel member on opposed sides of the swivel member, the support members being spring biassed towards each other and having a seal therebetween engaging the swivel member, and the spray head is connected to one of the support members and aligned with the waterway through the swivel member.

With this preferred form of swivel member and support means for the spray head, any wear of the swivel member is accommodated due to the spring bias and self-adjusting mode of the two support members that are urged towards each other to be maintained in engagement with the swivel member.

The spray head may be of any suitable kind having an outlet chamber from which water is discharged through a simple rose or spray plate formed with an array of outlet holes. The spray head may be of a particular type invented by ourselves and capable of manual adjustment to vary the spray pattern and flow rate.

Other features of this invention will be described later herein.

The invention will now be described with reference to exemplary embodiments of a shower fitting for a fixed shower installation as depicted in the accompanying drawings wherein:

FIGURE 1 is a side elevation of a shower fitting;

FIGURE 2 is a sectional view of the shower fitting shown in Figure 1;

FIGURE 3 is a sectional view showing an alternative mounting arrangement for the shower fitting; and

FIGURE 4 is a cross-sectional view on line 4'-4' given in Figure 1.

With reference to the drawings, the shower fitting 1 is arranged to be mounted on a fixed structure 2 such as a wall or partition so as to project therefrom in the manner of an arm with the fitting 1 including a spray head 3 for discharge of water spray. The spray head 3 is carried for swivelling movement so that the trajectory of the spray can be varied to suit the user.

In the embodiment shown in Figures 1 and 2, the water supply pipe or riser (not shown) is secreted within the structure 2 to give a lead-through mounting without any plumbing connections or pipes being exposed.

In the embodiment shown in Figure 3, the water supply pipe is a riser 4 exposed outside the structure 2 such as is common where a mixing valve or instantaneous water heater is face fixed also to the structure 2. These two alternative arrangements for mounting and connecting the fitting 1 will be described later in detail.

The fitting 1 comprises an elongate hollow body 10 providing a waterway 11 through which water flows from an inlet 12 to an outlet 13. The waterway through the body 10 converges to the outlet and the body terminates in an offset outlet port 14 of annular form into which a swivel member 15 is secured by welding or bonding a hollow boss 15*a* of the swivel member 15 to the wall of the body.

The swivel member 15 is formed with an axial throughway 16 opening to the outlet port 14 and opening into the inlet chamber 17 of the spray head 3. Conveniently, the body 10 may be a plastics moulding and the swivel member 15 may also be made of plastics of suitable strength and low friction characteristics.

The swivel member 15 has a part-spherical outer surface 18 on which a support assembly is arranged for sealed engagement with the swivel member and to support the spray head 3 for relative swivelling movement.

The support assembly comprises a support mounting 19 that is of annular form with an inner partspherical face complementing and engaging that part of the swivel member adjacent to the outlet 14 and converging away from the maximum transverse diameter of the part-spherical surface. The support mounting 19 would be mounted on the swivel member prior to securing same to the body if the swivel member boss 15*a* is bonded or welded thereto. The support mounting 19 is formed with a flange 20 extending towards the outlet 14 with the flange being formed with flats for engagement by a suitable tool during assembly of the spray head thereto.

The support mounting 19 has a further annular flange 21 extending from a central shoulder 22 and of greater diameter than the flange 20 so as to leave a clearance between the swivel member and the internal face of the flange 21.

The spray head 3 includes a housing 23 of annular form having staggered opposed flanges 24, 25 extending from a shoulder portion 26. The flange 24 extending towards the swivel member 15 has an outer thread formation in engagement with a complementary thread formation on the inner face of the flange 21 of the support mounting 19.

Intermediate the flange 24 of the housing 23 and the part-spherical surface of the swivel member 15 there is a further support mounting 27 also formed with an inner annular partspherical face for engagement with the complementary face of the swivel member. An O-ring seal is disposed between the two opposed mountings 19 and 27 being located in a recess formed between the two mountings and closed by the flange 24 of the housing 23.

The support mounting 27 is biassed into

engagement with the swivel member by a helical spring 28 received in an internal annular recess 29 of the mounting 27 and abutting the shoulder portion 26 of the housing 23.

By the opposed arrangement of the two support mountings 19 and 27 with the spring force exerted thereon, the support mountings are urged together so as to be maintained in contact with the swivel member 15 whilst supporting and mounting the spray head housing 23.

The outer flange 25 of the spray head housing 23 encloses and mounts an adjustable spray mechanism which will now be briefly described.

The spray mechanism includes a control member 30 which is supported on and rotatable relative to a central boss 31 of the housing 23. The control member 30 defines a chamber 32 into which water from the inlet chamber 17 flows for selected discharge through an apertured spray plate 33. A poppet valve 34 is arranged for actuation on rotation of the control member 30 to open or close respective ports to control flow into either a central outlet chamber 35 and/or an outer annular chamber 36 whereby the user can select the type and pattern of spray discharged.

The type of spray mechanism supported on the swivel member is optional, and the spray mechanism could be a simple rose plate screwed or otherwise secured into the outer flange of the housing 23 mounted by the support means as just described. Alternatively, a similar housing may be used adapted for mounting on the aforesaid support means.

The support means for the spray head 3 is enclosed and protected by a bellows or gaiter 40 which is of hollow cylindrical convoluted form made of suitable elastomeric material for flexing movement on swivelling movement of the spray head relative to the body 10.

One bead end of the bellows 40 is received and located in an annular recess 41 formed in the periphery of the shoulder of the housing 23, and the other bead end of the bellows is received in a groove 42 extending around an annular rib 43 projecting from the body 10 concentric to the outlet 14. The end beads of the bellows may be reinforced and have integral springs or be confined in situ by the natural resilience of the elastomeric material.

As will now be appreciated, the bellows provides an enclosure for all of the main component parts of the swivel support for the spray head so as to protect these parts both from the effects of the water during use of the fitting and to prevent damage to the parts.

With reference to the mount arrangement shown in Figures 1 and 2, the inlet end of the body 10 terminates in an outward flange 50 formed with spaced apart holes. A base plate 51 provides the mount and is secured to the structure 2 either by screws (not shown in Figure 2 but see Figure 3) or by direct support on the water supply pipe (not shown) within the structure 2.

The base plate 51 has a central opening 52 through which extends a hollow threaded spigot 53 for connection by any suitable pipe coupling to the water supply pipe. The spigot 53 extends through the inlet end of the body 10 and carries a gland nut 54 in threaded engagement for axial adjustment relative to the spigot 53. The gland nut 54 is formed with a hexagonal end 55 by which the nut 54 may be turned by a suitable tool. The gland nut 54 carries an O-ring seal 56 seated between the end 55 and an annular shouldered flange 57. The inner face of the base plate 51 adjacent the central opening 52 and the shouldered flange 57 is arranged to seat in such recess.

As will be understood, in assembling the mount arrangement, the spigot 53 is connected to the water supply pipe so as to project from the structure 2. The base plate 51 is placed over the spigot 52 and the gland nut 54 is then engaged with the spigot and turned until the shouldered flange 57 is in tight secure engagement with the recess in the base plate 51 as shown in Figure 2. The body 10 is then located over the spigot 53 and gland nut 54 so that the flange 50 can be fixed to the base plate 51 by screws 58 with the O-ring seal 56 in sealing engagement with the internal face of the body 10 at the inlet end 12.

The body 10 is enclosed by upper and lower trim members 60,61 respectively of which each inner end 60*a*,61*a* is of stepped profile to seat in an annular groove 59 formed in the periphery of the base plate 51. Each outer end 60*b*,61*b* of the respective trim members 60,61 are designed to extend around the spray head. The trim members 60,61 are designed to complement the overall design.

As shown in Figures 1 and 4, the body 10 carries two opposed wing members 62 that extend laterally from the body to engage the trim members 60,61. Each wing member 62 is similar and is for use in securing the trim members 60,61 in position over the body 10 with a clip or snap-on fit as will now be described.

The free edge of each wing member 62 is formed with a profiled recess 63 arranged to receive an inner edge rib 64 of the lower trim member 61 to clip the member to the body 10. Similarly, the upper trim member 60 has an inner edge rib 65 for reception and engagement with the profiled recess 63 to clip the member 60 to the body 10. The respective edge formations of the upper and lower trim members 60,61 are also formed with flanges 66,67 respectively that overlie and engage each other to close the join between the

trim members when mounted on the body 10.

By this arrangement of the trim members 60 and 61, these may be mounted over and clipped on to the body wings 62. The lower member 61 is first located at the inner end by engaging the groove 59 and then lifting the trim member so that the outer end passes over the spray head 3 and seats around the body 10 near the annular rib 43 with simultaneous location on the wings 62 to hold the trim member 61 in situ. The upper trim member 60 is then located at it's inner end by engaging the annular groove 59 in the base plate 51 and then lowering the member over the top of the body to engage the wings 62 and to close over the body and the edge flanges 67 of the lower trim member 61. The assembly and enclosure is thus completed and no special tools are required.

In the alternative arrangement depicted in Figures 3 and 4 for an exposed water pipe 4, the same form of base plate 51 is used to mount the body 10 by screws 55 extending through the body flange 50. The open inlet end of the body is closed by a plug seal 70 which is seated in the inlet end of the body and engaged in the central opening of the base plate 51.

The free end of the water pipe 4 extends through a clearance hole 71 formed in the lower trim member 61, and the lower wall of the body 10 is formed with an inlet boss 72 mounting a closure ring 73 with an O-ring seal 74 engaging the pipe 4.

For installing this alternative arrangement, the base plate 51 is secured to the structure 2 and the body 10 is fitted to the end of the riser pipe 4 with the bottom trim member 61 being loosely positioned over the pipe and spray head 3. Once this has been completed, then both the trim members 61 and 60 can be clipped onto the body 10 as previously described.

If desired for certain designs or types of fitting, more than one set of opposed wing members may be provided extending from the body for engagement with the respective trim members. Alternatively, the body may be provided with lengthwise ribbed flanges having suitable recess formations for engagement with each trim member to provide a lengthwise support for each side of each trim member on the body.

The trim members 60,61 are preferably made of a strong plastics material with a limited degree of resilience to achieve the limited flexibility required for clipping the members onto the body 10.

The style, colour and finish of the trim members may be selected as required from a range of trim members to fit a standard body and spray head. As already mentioned, the spray head may be of any suitable type adapted to be connected to and supported on the support means mounted on the swivel member.

The invented spray fitting provides simplicity in use by the user to vary the trajectory of the spray from the spray head by merely moving the spray head within the range of swivelling movement. The user does not have to make any special steps to hold the spray head in an adjusted position as the spring-loaded support means provides sufficient restraint to hold the spray head in the adjusted position.

The outer finish and appearance of the fitting is neat without exposing any internal components, and the assembly is sealed against entry of water during use of the fitting.

For the installation of the fitting, the procedure is simple only requiring standard use of tools for the actual plumbing connection to the water supply pipe, and all such plumbing connections are secretly housed within the fitting.

The fitting enables a standard design and type of fitting to be used with a wide range of styles or colours or finishes by suitable provision of selected trim members.

Other advantages in the design and construction of this invented fitting for a fixed shower will be appreciated by those skilled in this field.

CLAIMS

1. A shower fitting with a spray head for a fixed shower installation for ablutionary purposes, the fitting comprising a mount for securing to a fixed structure and for mounting a hollow elongate body having an inlet for connection to a water supply pipe, the body defining a waterway to an outlet remote from the inlet, a swivel member mounted in the outlet and having a waterway therethrough to conduct water from the outlet to a spray head for spray discharge, the swivel member having an outer part-spherical surface on which support means for the spray head is mounted in sealing engagement for swivelling movement of the spray head relative to the body, and flexible bellows means of convoluted hollow cylindrical form extending between the body and the spray head both to enclose the swivel member and support means and to enable such swivelling movement.

2. The shower fitting according to Claim 1 wherein the inlet end of the body is provided with means for supporting the body to the mount for securing the fitting to a fixed structure.

3. The shower fitting according to Claim 2 wherein the body has a flange at the inlet end for securing to a base plate of the mount.

4. The shower fitting according to Claim 3 wherein the mount and the inlet end of the body enclose a gland connection for a water supply pipe.

5. The shower fitting according to Claim 3 wherein the inlet end of the body is provided

with a lateral inlet for connection to a water supply pipe.

6. The shower fitting according to any one of the preceding Claims wherein trim members are arranged to enclose the body and to cover the mount securing the body to the fixed structure.

7. The shower fitting according to any one of the preceding Claims wherein the support means comprises two opposed support members each having seating faces for respective engagement with the swivel member on opposed sides of the swivel member, the support members being spring biassed towards each other and having a seal therebetween engaging the swivel member, and the spray head is connected to one of the support members and aligned with the waterway through the swivel member.

8. The shower fitting according to Claim 7 wherein the spray head includes a housing of annular form having opposed flanges extending from a shoulder portion, one flange extends towards the swivel member and is connected to one of the support members and the other flange mounts a spray mechanism.

9. The shower fitting according to Claim 8 wherein the spray mechanism is adjustable for user selction of the type and pattern of spray discharged.

10. The shower fitting substantially as herein before described with reference to the accompanying drawings.

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