

[54] **ABLUTIONARY APPLIANCES**

[75] Inventor: **Dennis Charles Arbon**,
Bourton-on-the-Water, England

[73] Assignee: **Walker Crosweller & Company
Limited**, Cheltenham, England

[22] Filed: **Sept. 19, 1972**

[21] Appl. No.: **290,366**

[30] **Foreign Application Priority Data**

Oct. 29, 1971 Great Britain 50,429/71

[52] U.S. Cl. **239/538, 239/562, 239/587**

[51] Int. Cl. **B05b 1/32**

[58] Field of Search 239/537, 538, 562,
239/587, 588, 539, 540, 26, 456

[56]

References Cited

UNITED STATES PATENTS

2,790,632	4/1957	Mellette.....	239/587 X
3,680,780	8/1972	Arbon.....	239/587 X

Primary Examiner—Allen N. Knowles

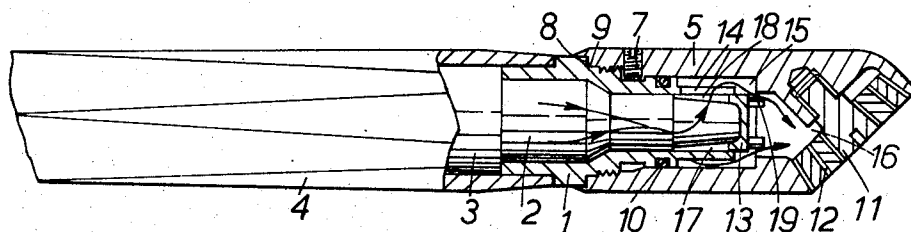
Attorney—Imirie & Smiley

[57]

ABSTRACT

A spray nozzle fitting in which a spray head is rotatably mounted on a body for movement from a first to a second position to change the direction of the discharge spray, and valve means within the spray nozzle controlled by such rotation of the spray head to obtain respective different rates of discharge flow when the spray head is in the first or second position.

5 Claims, 6 Drawing Figures



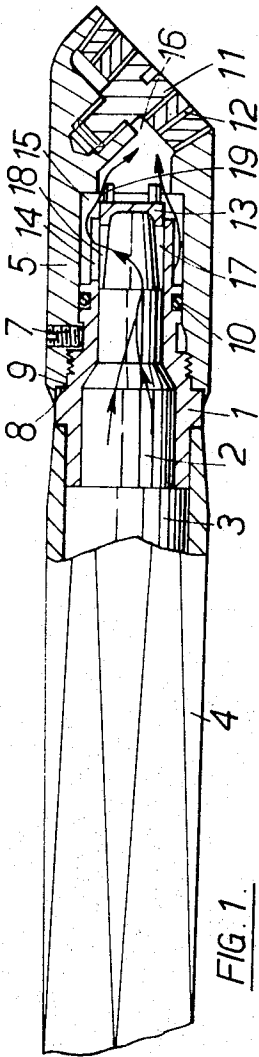


FIG. 1.

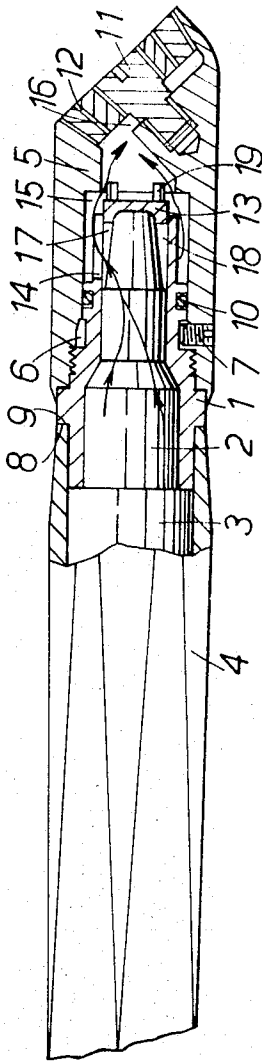


FIG. 2.

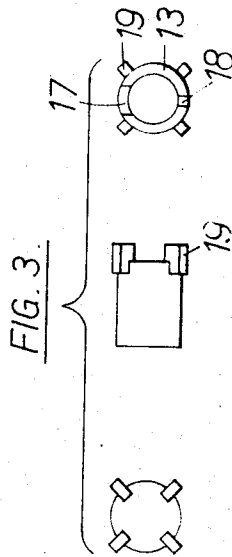
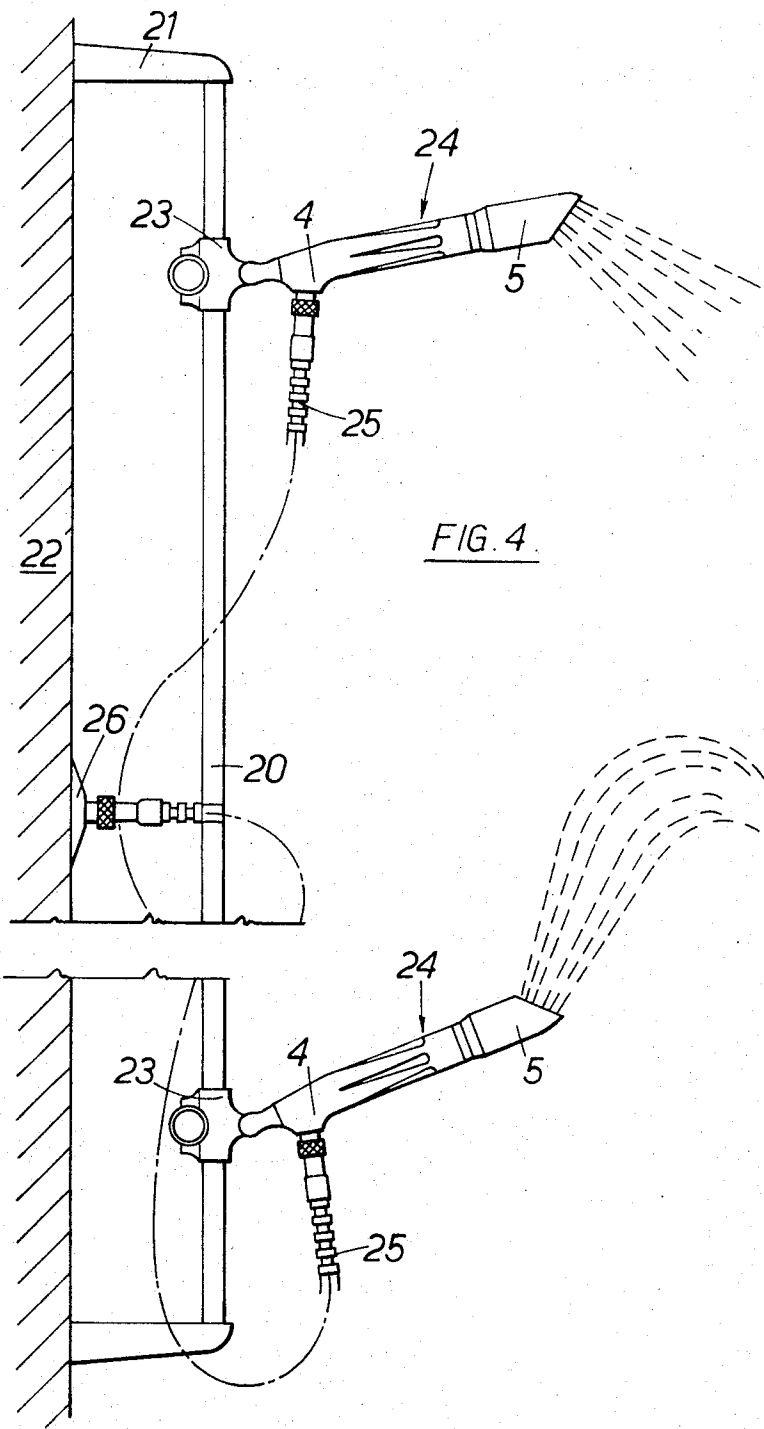
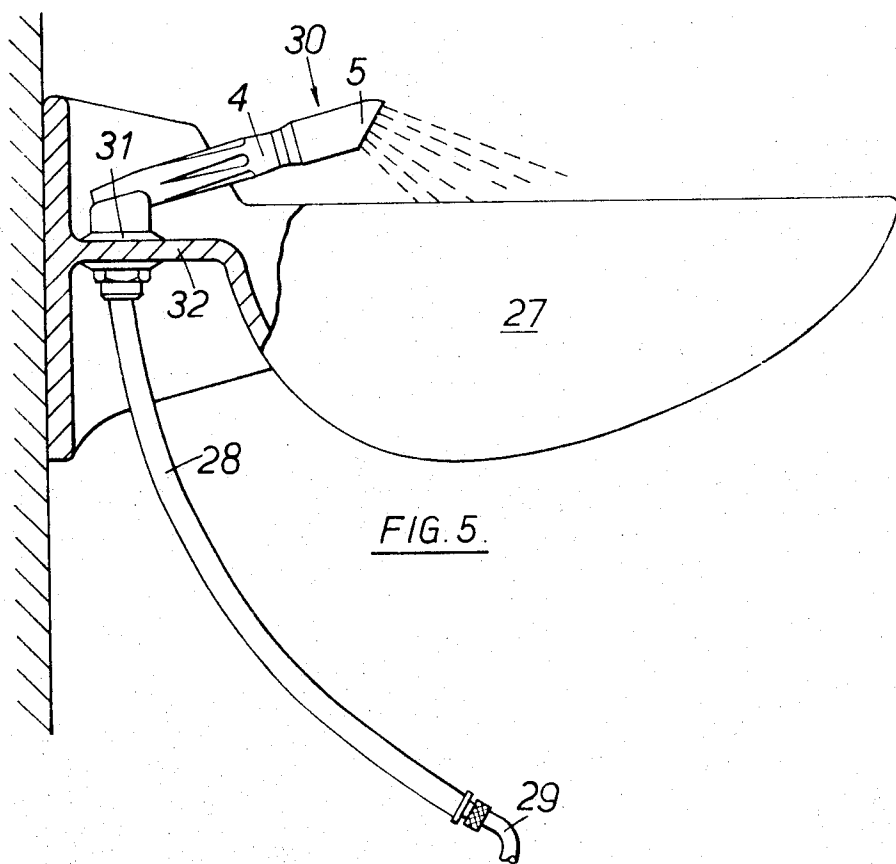
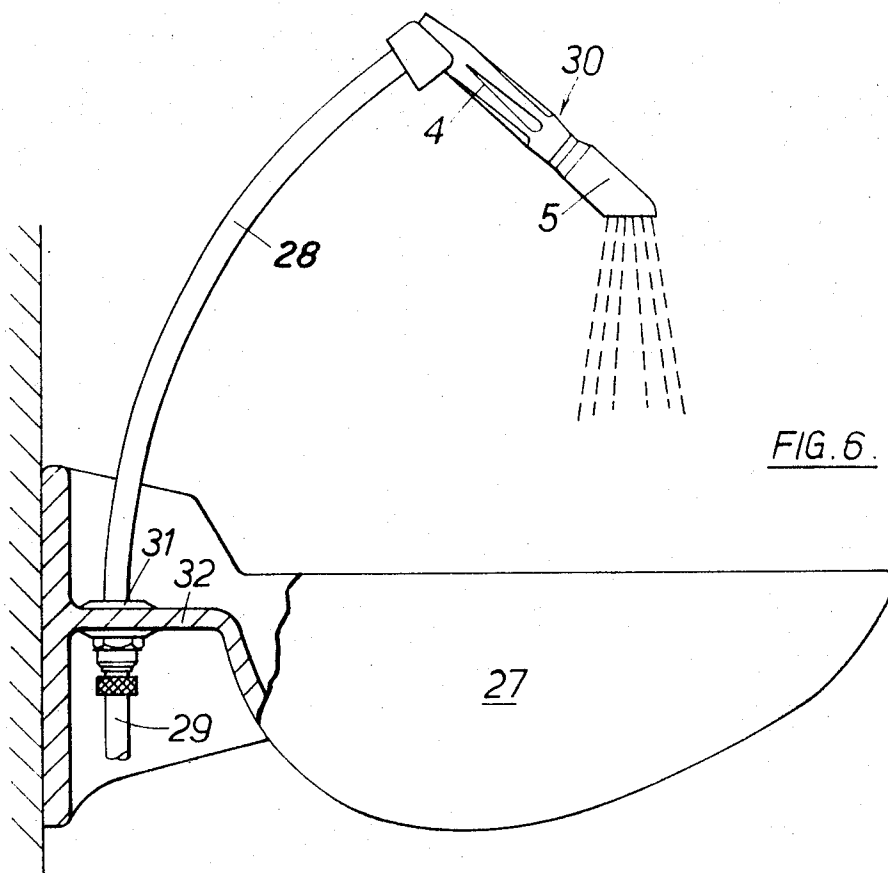


FIG. 3.







ABLUTIONARY APPLIANCES

This invention is concerned with spray nozzle fittings of the kind which are adapted or arranged to be mounted in a manner enabling them to be moved by the user to different positions relative to the catchment means to change the direction of the spray discharged from the spray nozzle. For instance, such kind of spray nozzle fittings may be mounted or supported on a slide for adjusting movement in a vertical sense; mounted on or supported by an adjustable extensible support; or mounted on or supported by an adjustable arm or bracket.

With such arrangements it is desirable to ensure that when the direction of spray is discharged from the spray nozzle is changed, the discharged water is directed into or will fall into the catchment means. Although it is conventional to provide a flow control valve, possibly in association with a mixer for the supply to the spray nozzle inlet, it is inconvenient to adjust this or to turn the valve off and on when it is required to change the direction of the discharged spray, for instance from a downward to an upward sense. Additionally, it is not feasible in most cases to provide catchment means such as a bowl or foot standing which covers a sufficiently large catchment area to accommodate the extremes of position changes. For this reason, in a shower or like arrangements, a cubicle or curtains are utilised to confine and direct the discharged spray into the foot standing.

The object of this invention is to provide a spray nozzle fitting of the kind afore-referred to which overcomes the above mentioned disadvantages by an improved construction in which the rate of flow of the discharged spray is automatically changed when the spray nozzle fitting is adjusted to vary the direction of the discharged spray.

Accordingly, this invention consists in a spray nozzle fitting of the kind defined comprising an elongated body formed with a bore for communication with a liquid supply, a spray head rotatably mounted on the body and having a spray discharge outlet, valve means mounted within the spray nozzle and providing a path for liquid from the bore to the discharge outlet, the valve means having first and second positions to provide two different rates of flow therethrough, and the valve means being arranged to be moved from the first position to the second position upon rotation of the spray head from a first position in which the spray discharge outlet is directed in one sense to a second position in which the spray discharge outlet is directed in an alternative sense.

Hence this invention may be applied to an arrangement in which the spray nozzle fitting is arranged so that in the first position the discharged spray is directed upwardly and the valve means provides a restricted flow rate and in the second position the discharged spray is directed downwardly and the valve means is arranged to provide a greater or unrestricted flow rate.

Preferably, the valve means is arranged to close the liquid path during rotation of the spray head between the first and second positions. Accordingly, whilst the main liquid supply is turned on, then during rotation of the spray head to change the direction of spray discharge the liquid is not discharged at intermediate positions, for instance, when the spray discharge outlet is directed horizontally.

A valve member of the valve means may be mounted co-axially of the spray head and rotatable in the body, the spray head and the valve member having interengaging means which serve to rotate the valve member relative to the body when the spray head is rotated between the first and second positions. The body may have a port arranged to register with either one of two ports formed in the valve member when the valve member is either in the first or the second positions with the cross-sectional area of the two ports being different so as to obtain differing flow rates therethrough.

An exemplary embodiment of the invention is depicted in the accompanying drawings wherein:

FIG. 1 is a longitudinal section of a spray nozzle fitting in a first position for a downward spray with full flow;

FIG. 2 is a longitudinal section similar to FIG. 1 but in a second position for an upward spray with restricted flow;

FIG. 3 is a detail of parts of the spray nozzle fitting depicted in FIGS. 1 and 2;

FIG. 4 depicts an illustration embodying the spray nozzle fitting; and

FIGS. 5 and 6 depict two alternative positions in a further installation embodying the spray nozzle fitting.

With reference to FIGS. 1, 2 and 3, the exemplary spray nozzle fitting comprises a body 1 which has a through bore 2 in communication with a bore or passageway 3 formed in a hand-grip 4 to which the body 1 is rigidly attached or secured. If desired the hand-grip and body may be integral. In any known and suitable manner the hand-grip is connected to a liquid supply pipe so that liquid may flow through the communicating bores 2 and 3.

A spray head 5 is rotatably mounted on the body 1 for relative movement between first and second diametrically opposed positions. These positions are defined by the closed ends of a semi-circular groove 6 formed in the outer periphery of the body 1 and in which a grub screw 7 located in the spray head 5 is engaged. The spray head 5 is located on the body against axial displacement relative to the body 1 by both the grub screw 7 and the interengagement of shoulders 8, 9 formed respectively on the body 1 and spray head 5.

A liquid-tight mounting is achieved by an O-ring 10 seated in a peripheral groove formed in the body 1 and engaging with the internal surface of the spray head 5.

A perforated spray nozzle 11 is mounted on the spray head 5 so that the direction of spray ports 12 extends transverse to the axis of rotation of the spray head 5. The spray nozzle 11 may be of any suitable configuration or design.

A cup-shaped valve member 13 is rotatably received in that end portion of the body 1 adjacent the spray nozzle 11, and that end portion of the body is provided with an axially directed port 14 with which the valve member 13 is arranged to co-operate. An annular chamber 15 extends around that end portion of the body and the chamber 15 is in communication with a further chamber 16 from which liquid is discharged through the spray ports 12.

As can best be seen in FIG. 3, the valve member 13 is formed with first and second axially directed ports 17 and 18 of which the circumferential length of the first port 17 is substantially greater than that of the second port 18. The valve member 13 is further provided with four equi-spaced lugs 19 extending from the closed end

of the valve member 13 towards the discharge chamber 16. The lugs 19 engage within four corresponding slots in the spray head 5 so that when the spray head 5 is rotated, the valve member 13 is rotated between first and second positions.

In the first position of operation as depicted in FIG. 1, liquid would be discharged through the spray nozzle 11 in a downwardly inclined direction. In such position an unrestricted or a full rate of flow of liquid is achieved as the first port 17 of the valve member 13 is in register with the port 14 of the body. Liquid flows through ports 17 and 14 into the annular chamber 15 and thence to the discharge chamber 16 through clearances between the valve 13 and the spray head 5.

When the spray head 5 is rotated into the second position depicted in FIG. 2, the spray nozzle 11 is disposed to provide an upwardly inclined spray. On rotating the spray head 5, the valve member 13 is turned through 180° by the interengagement of the lugs 19 with the spray head 5. The port 18 is thus brought into register with the port 14 of the body. In this second position only a restricted or limited rate of flow of liquid can be achieved as the second port 18 of the valve member 13 is smaller than the first port 17. Liquid now flows through ports 18 and 14 into the annular chamber and thence to the discharge chamber 16.

Whilst the spray head 5 is rotated between the first and second positions, there is no communication from the bore 2 to the annular chamber as the continuous wall of the valve member 13 intermediate the ports 17 and 18 is in register with the port 14.

As will now be appreciated where the invented spray nozzle fitting is being utilised in an installation having a limited catchment area by appropriate selection of the areas of the valve ports the flow rates through the valve member to the spray ports can be chosen to obtain the required trajectory of the falling or descending discharge spray to ensure that it is in the catchment area.

Although in the foregoing embodiment of this invention, the two positions provide discharge spray directions extending normal to one another, other variations are possible by modifying the degree of relative rotation and/or the angular spacing between the valve ports. Additionally, more than two positions could be provided for certain applications or installations by modifying the port arrangement of the valve member.

In order that the applications of this invention be fully understood reference will now be made to the drawing of FIG. 4 which depicts a wall mounted installation such as would include a catchment area comprising a footstanding (not shown).

The installation comprises a vertically extending guide rail 20 supported at each end by a pillar 21 mounted on the wall or analogous support 22. A clamping sleeve 23 is mounted on the rail 20 for sliding movement along the length thereof and a spray nozzle fitting 24 is supported by the sleeve 23. The spray nozzle fitting 24 is of the type afore-described with reference to FIGS. 1, 2 and 3, and the liquid supply pipe 25 is flexible and extends from a wall mounted socket 26.

As will now be apparent, the spray nozzle fitting 24 may be utilised at any desired vertical position by sliding the sleeve 23 and clamping it in the required position. In the upper position, the spray head is in its first position with a full downward spray discharge, and in

the lower position the spray head is in its second position with a restricted upward spray.

In a further installation as depicted in FIGS. 5 and 6, the catchment area is defined by a wall mounted basin 27 and the invented spray nozzle fitting 30 is mounted on one end of a curved tube 28 which is connected to a flexible supply pipe 29. The curved tube 28 may either house a supply pipe or constitute the pipe itself. The tube 28 extends through a boss 31 mounted on the rear ledge 32 of the basin. The boss 31 guides the tube 28 for relative sliding movement so that the spray nozzle fitting 30 can be adjusted to different positions relative to the basin 27. The two extreme positions are depicted in FIGS. 5 and 6. If desired a frictional device engaging with the tube 28 may be provided to ensure that the spray nozzle fitting is retained in the desired position.

As will now be clear, if and when it is required to have an upwardly directed spray discharge, then the spray head may be rotated which will result in the flow rate being restricted so that the falling spray is still within the confines of the basin rim.

It is envisaged that certain modifications to the spray nozzle fitting as aforescribed could be made to achieve the same result. For instance, the body could be provided with the ports of differing cross-sectional area, and the valve member be provided with a single port which is brought into register with either of the body ports on rotation of the valve member relative to the body. Such modified version is also deemed as within the scope of this invention.

Yet a further modification is envisaged in which the valve member includes two or more parts and one part is rotatable with the spray head whilst the other part is stationary with respect to the body.

I claim:

1. A spray nozzle fitting comprising an elongated body formed with a bore for communication with a liquid supply, a spray head rotatably mounted on said body and having a spray discharge outlet, valve means mounted within said spray nozzle and providing a path for liquid from said bore to said discharge outlet, said valve means including a valve member mounted coaxially of said spray head and rotatable in said body between first and second positions to provide two different rates of flow through said valve means, said spray head and said valve member having interengaging means which serve to rotate said valve member relative to said body when said spray head is rotated between said first position in which said spray discharge outlet is direct in one sense and said second position in which said spray discharge outlet is directed in an alternative sense.

2. A spray nozzle fitting according to claim 1 wherein said body includes a port arranged to register with either one of two ports of differing cross-sectional area formed in said valve member when said valve member is either in said first or second positions whereby said different flow rates may be obtained, and said valve member is arranged to close said liquid path during rotation of the spray head between said first and second positions.

3. A spray nozzle fitting according to claim 2 wherein said body port opens to an annular chamber extending between said body and said spray head and said annular chamber is in communication with a discharge chamber, and a perforated spray nozzle mounted on said

5

spray head extending transverse to the axis of rotation of said spray head terminates the extent of said discharge chamber.

4. A spray nozzle fitting according to claim 3 wherein said valve member is cup-shaped and rotatably mounted within said body, said valve member having a base remote from the inlet of said bore, lugs on said base of said valve member engaging with slots in said spray head.

6

5. A spray nozzle fitting according to claim 4 wherein said first and second positions of the spray head are diametrically opposed and defined by means carried by said spray head located in a semi-circular groove having closed ends formed in said body, a hand grip carried by said body, and a bore extending through said hand grip and communicating with a liquid supply and said bore in said body.

* * * * *

10

15

20

25

30

35

40

45

50

55

60

65