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FITTING ADAPTER AND NOZZLE ASSEMBLY

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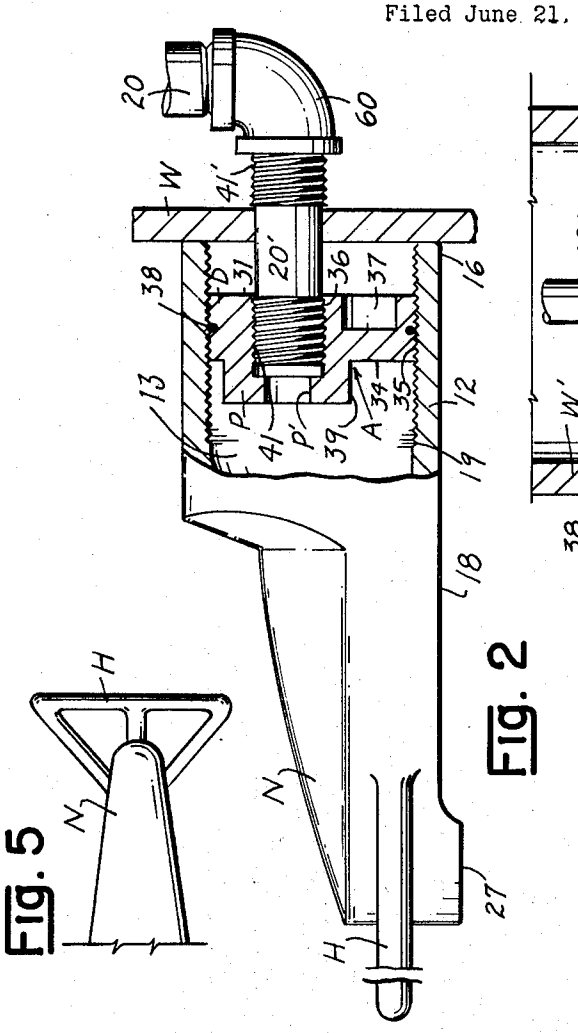

Fig. 2

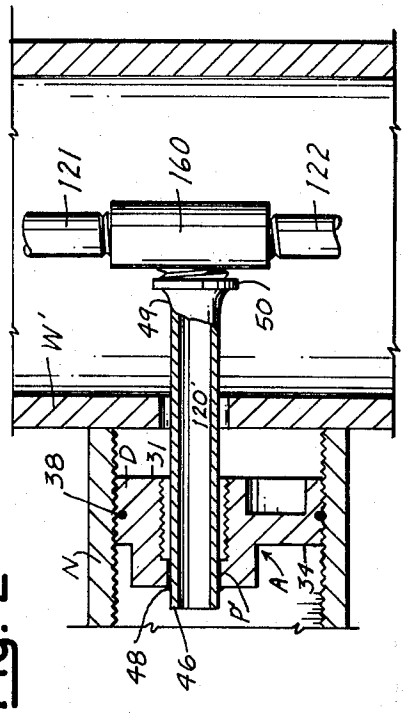

Fig. 4

Fig. 5

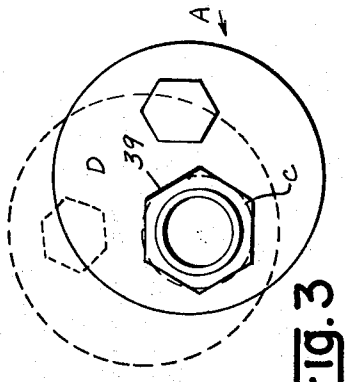

Fig. 3

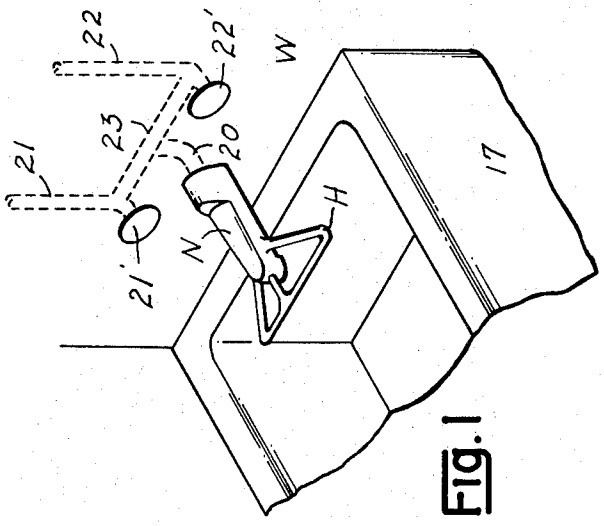

Fig. 1

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FITTING ADAPTER AND NOZZLE ASSEMBLY

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9 Claims. (Cl. 137—328)

ABSTRACT OF THE DISCLOSURE

A cylindrical adapter is provided with threads on its outer cylindrical surface and an eccentrically disposed opening extending through the body of the adapter between the circular surfaces of the cylinder. The threaded surface engages internal threads formed in the base of a combined water nozzle and handle fitting and the eccentric opening is secured to a water conduit projecting from a wall surface. Positioning of the nozzle in a plane parallel to the plane of the wall is effected by rotating the adapter about the conduit while adjustment of the space between the wall and the base of the nozzle is effected by varying the degree of threaded engagement of the nozzle and the adapter.

This is a continuation-in-part of my prior copending application Ser. No. 365,320, filed May 6, 1964, and now abandoned.

The present invention relates to new and useful improvements in fitting adapter and nozzle assemblies and more particularly to a fitting adapter for connecting a nozzle to a fluid supply line extending through a splashboard wherein the nozzle may be positioned at a desired position relative to the wall and connected to the fluid supply line with the base portion of the nozzle abutting the splashboard through which such supply line extends and wherein the nozzle is constructed and arranged to provide for complete drainage of stagnant fluid from the nozzle and to further provide a secure hand hold for support during movement in and about a bath tub or the like.

Where water outlet spouts or fluid nozzles are installed on a splashboard or wall overlooking a bathtub, basin, sink, or the like, the nozzle is generally connected to a nipple or fluid supply line which extends through the splashboard. Because of the variations in the relative thicknesses of the different types of splashboards which are normally used with basins or tubs, such as Formica, ceramic tile, marble, or the like, it has almost invariably been necessary to resort to trial and error procedure to find a nipple of precisely the correct length to provide a strong watertight fit between the nozzle and the nipple to which it is connected and to simultaneously position the nozzle with its base portion abutting against the splashboard through which the nipple extends. This requires connecting a nipple to a fluid supply line or water pipe which is behind the splashboard on which the nozzle is to be mounted and then connecting the nozzle or waterspout to the nipple to determine whether the nipple, which has been selected, projects beyond the splashboard the proper distance for mounting the nozzle thereon. If it happens that the nipple is too long or too short, it is necessary to remove the nozzle as well as the nipple and to repeat the procedure, thereby exposing the nozzle as well as the splashboard to the risk of being scratched or damaged and also consuming unproductive time. Also, in some instances, it is necessary to test the fitting with line pressure to determine whether or not a water tight connection has been made between the nozzle and the nipple.

Another problem is to center or align the nozzle with the tub or basin with which it is used. Generally, when the fluid supply conduit is installed, it is not positioned precisely, and thus may be too high or too low relative to the tub. Therefore, when the nozzle is installed, it becomes necessary to shift the location of the nozzle laterally or up or down relative to the fluid supply conduit to center or align the nozzle relative to the tub or basin. This may put a strain on the nipple which will subsequently cause a leak in one of its connections or, in some instances, it may be necessary to relocate the fluid supply conduit in order to properly align the nozzle relative to the tub.

Another problem arises in connection with a bathers' movement in and about a tub or the like. Thus, most bath tub areas are not provided with a secure hand-hold or support which a bather may grasp for support when entering, leaving or moving about a tub.

Yet another problem is presented by the accumulation or retention of water in the nozzle after the fluid supply has been shut off, with the resulting stagnant water being subject to freezing or causing mineral deposits and corrosion of the nozzle.

It is therefore an object of the present invention to provide a new and improved fitting adapter for connecting a nozzle to a fluid supply conduit and for positioning the nozzle at a desired position relative to the tub or basin which such nozzle serves and to eliminate the necessity of using a nipple between the nozzle and water supply of an exact length.

Another object of the present invention is to provide a new and improved fitting adapter for connecting a nozzle to a nipple or copper tubing connection extending through a splashboard wherein the nipple or copper tubing connection does not have to be of a predetermined length in order to connect the nozzle to the connection with the base of the nozzle abutting the splashboard.

And yet another object of the present invention is to provide a new and improved fitting adapter for connecting a nozzle to a nipple or copper tubing connection and for positioning the nozzle at a desired lateral position relative to the nipple or copper tubing connection with the base portion of such nozzle abutting one side of the splashboard through which the connection extends.

Still another object of the present invention is to provide a new and improved fitting adapter having a bore formed internally thereof for connecting a nipple or copper tubing connection thereto and having external threads formed eccentrically of the internal threads for connecting a nozzle thereon.

Another object of the present invention is to provide a new and improved fitting adapter for connecting a nozzle to a fluid supply conduit extending through a wall and for positioning a fluid nozzle at a desired position relative to such wall which includes an axially extending projection having a bore extending therethrough with internal threads formed in the bore and a threaded cylindrical surface which is disposed eccentrically relative to said internally threaded bore.

Another object of the present invention is to provide a new and improved fitting adapter for connecting a nozzle to a fluid supply conduit and for positioning the nozzle at a desired position relative thereto including an axially extending externally threaded cylindrical surface and an axially extending projection having a bore extending therethrough with internal threads formed in the bore and with said axial projection extending beyond said cylindrical surface and having wrench faces formed thereon.

And yet another object of the present invention is to provide a new and improved fitting adapter and nozzle whereby said adapter connects said nozzle to a fluid supply conduit to permit simultaneous axial and radial movement of said nozzle along and about said fluid supply conduit and wherein said adapter further provides a water-proof, tightly fitting connection between said adapter

and said nozzle, with said nozzle providing a secure hand-hold for assisting in movement in and about a bath tub or the like and wherein said nozzle further provides for complete drainage therefrom of any stagnant accumulated or retained fluid.

Other objects and advantages of the present invention will become more readily apparent from a consideration of the following description and drawings wherein:

FIG. 1 is a perspective view showing a nozzle mounted on a splashboard over a bathtub and connected to a water supply line;

FIG. 2 is an enlarged side view, partly in elevation and partly in section showing the fitting adapter and nozzle of the present invention connected to a conventional iron water pipe or nipple;

FIG. 3 is a front elevation showing the fitting adapter of the present invention aligned so as to position the longitudinal axis of a nozzle radially about the longitudinal axis of a water supply line with a superimposed view in dotted line showing the adapter turned 90° from the first position;

FIG. 4 is an enlarged side view partly in elevation and partly in section showing the fitting adapter of the present invention connected to a copper or other semisoft type tubing; and

FIG. 5 is a top elevation showing the nozzle of the present invention.

As shown in FIG. 1 of the drawings, hot and cold water lines **21** and **22**, respectively, are connected to a manifold **23** for mixing hot and cold water. A fluid conduit **20** is connected to the manifold **23** for conducting water to the nozzle N which, as shown, is mounted on the wall W for directing a stream of water into the tub **17**. Faucets **21'** and **22'** are provided in the manifold **23** for controlling the flow of water through the nozzle N. A handle H is formed integrally with the nozzle N and provides a secure hand-hold to facilitate movement of a bather in and about the tub **17**.

As shown in greater detail in FIG. 2, the nozzle N comprises a hollow body portion **12** having a passage **13** extending from its base **16** to its outlet or discharge port **27**. When mounted against wall W as shown in FIG. 2, the under surface **18** of body portion **12** slopes uniformly down from base **16** to outlet **27**, to allow for proper drainage, thus eliminating any accumulation or retention of stagnant water in the nozzle N after the faucets **21'** and **22'** have been closed. Complete drainage of stagnant water from the nozzle N obviates problems caused by freezing of the water within the nozzle N, corrosion of the interior walls of passage **13**, and deposits of mineral residue within said passage **13**.

The nozzle N is provided with threads, **19** in hollow body **12** for connecting the nozzle N to the adapter A. The threads **19** extend longitudinally of the body **12** from the base **16** as far as the configuration of the body **12** will conveniently allow to provide the maximum range of flexibility in connecting the nozzle N and adapter A to the nipple **20'** as will hereinafter be described.

As best seen in FIGS. 1 and 5, the nozzle N is further provided with an integrally formed handle H. The handle H is preferably formed during the die casting of the nozzle N but may be a separate piece secured to the nozzle N in any well known manner. As hereinbefore noted, the handle H affords a secure hand-hold for entry into, departure from, and movement about the tub **17**.

FIG. 2 shows the nozzle N mounted against a wall W using the adapter A of the present invention. The fluid conduit **20** is connected to one end of an elbow **60**; the other end of elbow **60** is connected to an iron nipple **20'** by threads **41'**. The conduit **20**, elbow **60** and a portion of nipple **20'** are disposed behind a wall W, with the remainder of nipple **20'** protruding through the other side of wall W.

As best seen in FIG. 2 of the drawings, adapter A comprises a cylindrical body or disc D with surfaces **31** and **34** at its axial ends. The cylindrical surface of disc D is provided with threads **35** for engagement with the threads **19** of the nozzle N. A projection P extends in an axial direction from the surface **34** and is provided with wrench faces **39** as may be seen in FIG. 3 for tightening the adapter A onto the nipple **20'**.

The projection P is eccentrically disposed on the disc D. The disc D and projection P are provided with a bore P' extending from surface **31** through disc D and projection P. The bore P' is provided with threads **36** for engagement with threads **41** of nipple **20'**. A hexagonal socket or depression **37** extends into the disc D from the surface **31**. As will hereinafter be described, socket **37** is adapted to receive a corresponding hexagonal wrench (not shown) to be employed in removing the adapter A from the nozzle N.

The outer cylindrical surface of disc D carries an O-ring **38** which serves the dual function of providing a waterproof seal between disc D and nozzle N and further providing a tight fit therebetween for preventing undesired rotation of the nozzle N with respect to the disc D. The O-ring **38** may be constructed of any resilient, waterproof material, of which natural or synthetic rubber are exemplary.

In assembling the invention as seen in FIG. 2, the threads **36** of bore P' are engaged with the threads **41** of nipple **20'** by rotating the adapter A with the aid of a wrench applied to wrench faces **39** in a clockwise direction to the desired position. The threads **19** of nozzle N are then brought into engagement with the threads **35** of adapter A by rotating the nozzle N in a clockwise direction until the base **16** of nozzle N abuts against wall W. A slight amount of freedom of movement of the elbow **60** toward and away from wall W is sufficient to allow simultaneous abutment of the base **16** against the wall W while also permitting proper orientation of the outlet port **27** with respect to the tub **17**. That is, if the outlet port **27** should be directed away from the tub **17** when the base **16** first comes into contact with the wall W, the nozzle N may be further rotated in a clockwise direction until the outlet port **27** is directed down into the tub **17** as desired. The continued rotation of nozzle N after the base first abuts with wall W draws the nipple **20'** and elbow **60** in the direction of advancement of the adapter A. The total movement of elbow **60** and nipple **20'** is relatively small and, as will be recognized, is well within ordinary allowable limits.

To disassemble the nozzle N and adapter A from engagement with the nipple **20'** as well as from each other, the nozzle N is rotated in a counter-clockwise direction. If the adapter A is engaged with nipple **20'** after the nozzle N has been completely disengaged, the adapter A may be removed from nipple **20'** by merely applying a counter-clockwise rotation to the wrench faces **39**. If, however, the adapter A remains engaged within the base **16** of nozzle N after removal of the assembly from nipple **20'**, adapter A may be removed from the nozzle N by inserting a hexagonal wrench into socket **37** and effecting a counter-clockwise rotation of adapter A with respect to nozzle N.

As thus described, it will be seen that the adapter of the present invention provides a wide range of axial adjustment and, as a consequence, obviates problems caused by the lack of uniformity in the length of the fluid conductor extending from a wall or splashboard.

As may be best seen in FIG. 3 of the drawings, an important feature of the present invention is accomplished by virtue of the eccentric location of bore P'. Thus, as may be seen in FIG. 3 of the drawings, rotation of the adapter A from the position represented by the dotted lines to the position represented by the solid lines effects the illustrated change in the location of nozzle N. The nozzle N and adapter A are adjustable as a unit substantially along the circumference of the circle C shown in FIG. 3 of the drawings.

The freedom of movement substantially in the plane of the wall W permits centering, raising or lowering of the nozzle N. As is not infrequently the case, the fluid conduit **20** seen in FIG. 1 of the drawings is not centered directly over the tub **17** or, is too close or too far from the top of the tub **17**. The radial adjustability of the adapter and nozzle assembly may be employed to compensate for such irregularities. For example, if the dotted line position of the nozzle seen in FIG. 3 of the drawings were too far to the left of the center of tub **17**, clockwise rotation of adapter **17** would effect a simultaneous lowering and movement to the right to the position shown by the solid line.

The modification seen in FIG. 4 of the drawings illustrates the adapter of the present invention as it is applied to copper tubing or other semisoft conduit. As seen in the drawings, a hot and cold water line **121** and **122**, respectively, are connected to a T-fitting **160**. A relatively short length of copper tubing **120'** is connected by solder **49** or otherwise, to a threaded fitting **50**. Fitting **50** is threadedly engaged with T-fitting **160**. As may be seen, the assembly comprising hot and cold water pipes **121** and **122** respectively, T-fitting **160**, fitting **50** and a portion of tubing **120'** extending through the wall W' and terminating at end **46**.

In assembling the invention shown in FIG. 4, the adapter A is positioned over the tubing **120'** with the tubing **120'** passing through the bore P'. It will of course be appreciated that the adapter A may be positioned with its face **31** abutting the wall W' or with the adapter A spaced laterally from the wall W' as shown. Once the adapter A has been positioned as desired, it is connected to the tubing **120'** by solder **48** or by other suitable connecting means. The nozzle N is then threaded onto the adapter A as described above with respect to the invention shown in FIG. 2 of the drawings.

The adapter of the present invention is thus seen to provide both axial and radial adjustment along and about a projecting segment of a fluid conductor, thereby obviating the need for uniformity in the length of such projecting segment with a resultant reduction in unproductive installation time and cost of replacement fittings. Furthermore, the improved nozzle employed in combination with the fitting adapter is seen to provide a secure means for supporting a bather in moving in and about a bath tub or the like and also to effect complete drainage of stagnant fluid from the inner confines of the nozzle.

What is claimed is:

1. A fitting adapter and nozzle assembly for connecting a discharge nozzle and a fluid supply conduit comprising:
- (a) a cylindrical disc having threads on the outermost cylindrical surface of the portion of said disc having the greatest radius;
- (b) a nozzle having internal threads engaging said threads on said cylindrical disc; and
- (c) an eccentrically disposed bore extending through the length of said disc for engaging a fluid supply conduit wherein said bore is adapted to be disposed coaxially with said fluid supply conduit.

2. The invention of claim **1** above, including:
- (a) a multisided socket disposed in said cylindrical disc for removing said disc from said nozzle;
- (b) a multisided projection formed on said cylindrical disc for rotating said disc around said fluid supply conduit;
- (c) a seal carried by said outer cylindrical surface of said cylindrical disc for providing a water proof and tight fit between said cylindrical disc and said nozzle;
- (d) said nozzle having a base, a body portion and an outlet port wherein said base engages the outer cylindrical surface of said cylindrical disc and said body portion slopes uniformly down from said base to said outlet port to provide complete drainage of stagnant fluid from said nozzle; and,

- (e) a handle rigidly secured to said nozzle.

3. The adapter and nozzle assembly as described in claim **1** above wherein the axial length of said internal threads of said nozzle is at least twice as long as the axial length of the threads formed on said outer cylindrical surface of said disc.

4. An assembly as described in claim **1** above and further including:
- (a) first and second circular surfaces at the opposite axial ends of said cylindrical disc;
- (b) a multisided projection extending axially from said first circular surface of said disc for engagement with a wrench for rotating said disc around the fluid supply conduit;
- (c) a multisided socket extending axially into said second circular surface for engagement with a wrench for rotating said threaded disc within said internally threaded nozzle; and
- (d) a resilient O-ring seal means carried by said theaded outer cylindrical surface of said cylindrical disc for providing a tight, waterproof seal between said cylindrical disc and said nozzle.

5. The adapter and nozzle assembly of claim **4** further including a fixed handle rigidly secured to said nozzle.

6. The adapter and nozzle assembly of claim **1** wherein:
- (a) said nozzle includes a base, a cylindrical body portion and an outlet port;
- (b) said internal threads of said nozzle are formed along the inner cylindrical surface of said body portion of said nozzle; and
- (c) the axial length of said internal threads formed in said cylindrical body portion is greater than the axial length of said outer cylindrical surface of said disc.

7. The adapter and nozzle assembly of claim **6** including:
- (a) first and second circular surfaces at the opposite axial ends of said cylindrical disc;
- (b) a multisided projection extending axially from said first circular surface of said disc for engagement with a wrench for rotating said disc around the fluid supply conduit;
- (c) a multisided socket extending axially into said second circular surface for engagement with a wrench for rotating said threaded disc within said internally threaded nozzle; and
- (d) a resilient O-ring seal means carried by said threaded outer cylindrical surface of said cylindrical disc for providing a tight, waterproof seal between said cylindrical disc and said nozzle.

8. The adapter and nozzle assembly of claim **7** including a fixed handle rigidly secured to said nozzle.

9. A fitting adapter and nozzle assembly comprising:
- (a) a solid cylindrical disc having a threaded outer cylindrical surface on the part of said disc having the greatest radius;
- (b) a resilient O-ring seal carried by said outer cylindrical surface;
- (c) a threaded single axis bore eccentrically disposed in said cylindrical disc;
- (d) a projection on said cylindrical disc having wrench faces formed thereon for securing said disc to a fluid supply conduit;
- (e) a nozzle having a threaded base, a body portion and an outlet port wherein the base of said nozzle is threadedly engaged with the outer cylindrical surface of said cylindrical disc and wherein said body portion slopes uniformly downward from said base to said outlet port;
- (f) a multisided socket formed in said cylindrical disc for removing said disc from said nozzle, and
- (g) a handle rigidly secured to said nozzle.

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