

[54] **LAVATORY WITH INTEGRALLY MOLDED
FIXTURE**

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[21] Appl. No.: **251,610**

[52] **U.S. Cl.**..... **4/187 R, 4/166, D23/58**

[51] **Int. Cl.**..... **E03c 1/18, A47k 1/04**

[58] **Field of Search**..... **4/166, 167, 173, 187, 191;
D23/58-61; 137/801, 636.4; 117/27**

[56] **References Cited**

UNITED STATES PATENTS

D194,580	2/1963	Dailey.....	D23/58
R26,838	3/1970	Pecis.....	137/636.4
3,556,140	1/1971	Politz.....	137/801
3,582,388	6/1971	Stayner.....	117/27
3,590,876	7/1971	Young.....	137/801

OTHER PUBLICATIONS

American Home, June 1956, p. 14, FIG. 2.

Primary Examiner—John W. Huckert

Assistant Examiner—Stuart S. Levy

[57] **ABSTRACT**

A lavatory made of single molded plastic sheet with reinforcing on its underside is shaped to have a substantially flat counter portion, an upwardly rising back wall along the rear of the counter portion, a bowl rimmed by the counter portion, and a spout shaped fixture portion located between the back wall and the bowl. The fixture has a pair of spaced side walls rising up from the counter portion and extending forward from the back wall, a top side spanning between the side walls, and an underside which rises from the rear wall of the bowl in an arch to extend out over the bowl and join with the side walls and top to form the spout. A valve is mounted on the top side of the fixture portion.

2 Claims, 4 Drawing Figures

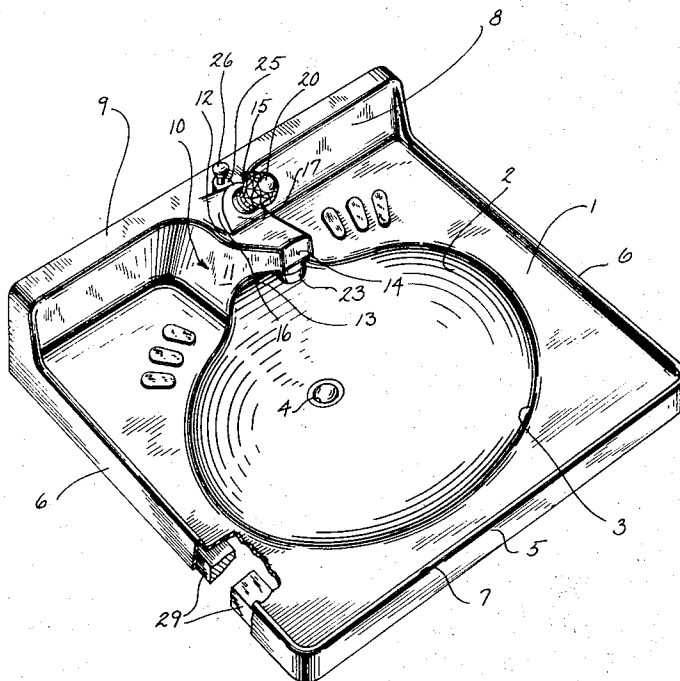


Fig. 1

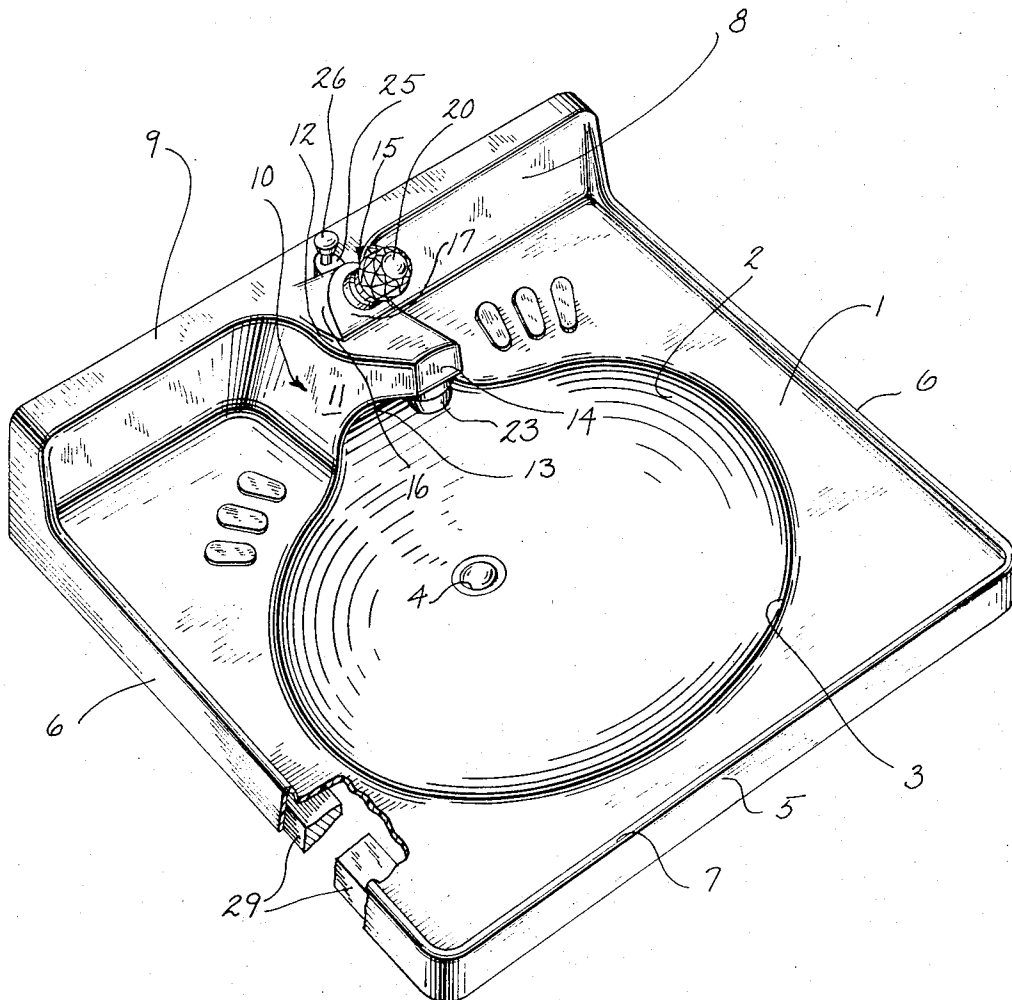
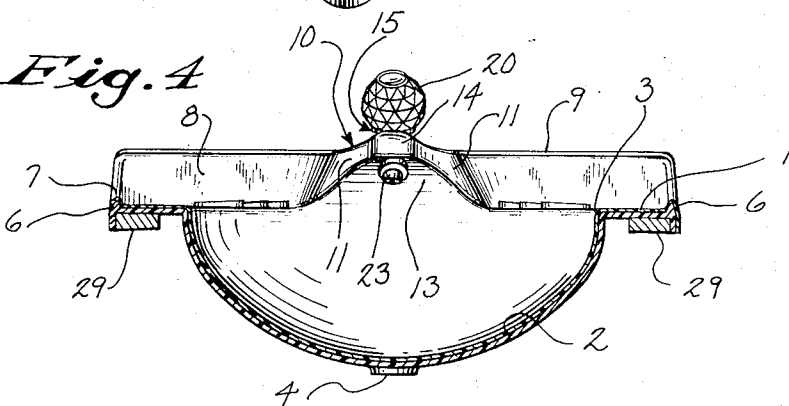
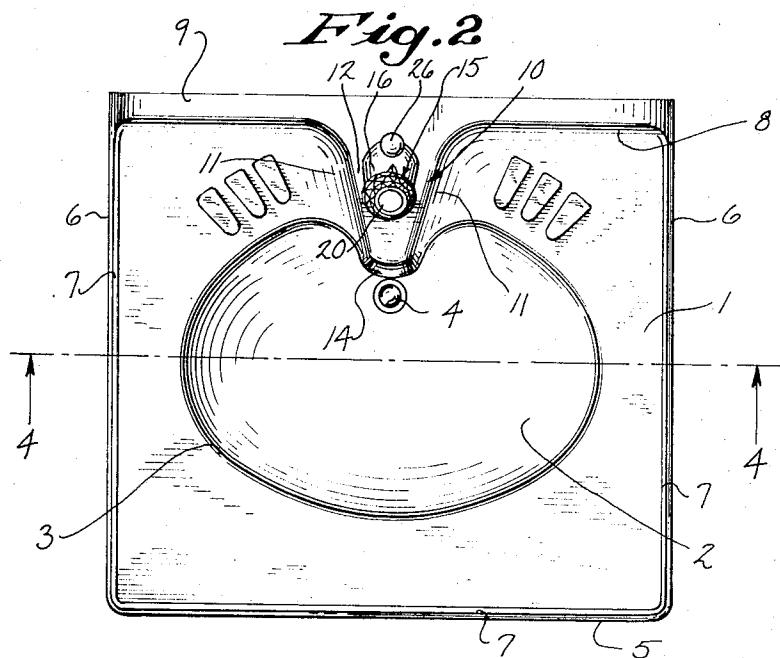
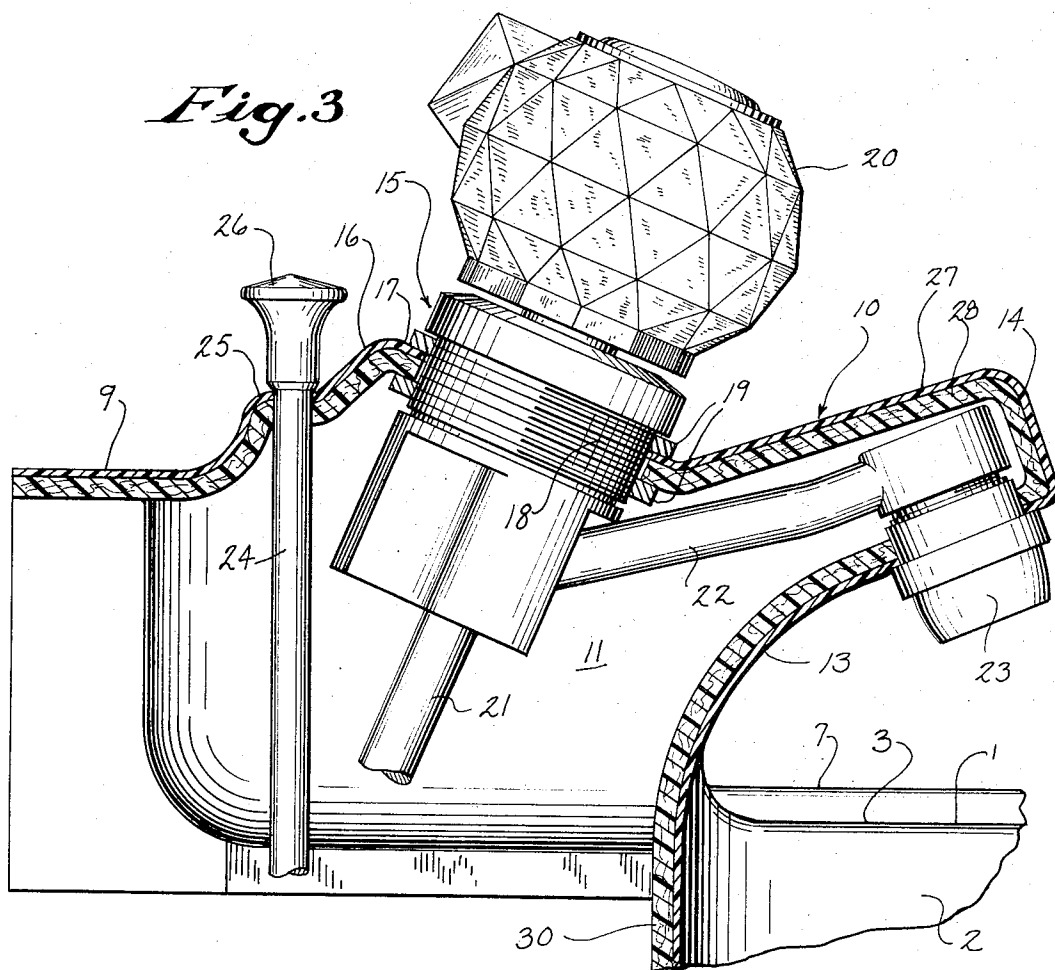


Fig. 4





LAVATORY WITH INTEGRALLY MOLDED FIXTURE

BACKGROUND OF THE INVENTION

The field of the invention is lavatories and specifically lavatories fabricated from reinforced plastic materials.

Until recently, lavatories were primarily manufactured from ceramics, cast iron, or thick molded plastic. By using reinforcing methods, such as that disclosed in U.S. Pat. No. 3,582,388 entitled "Rigidified Synthetic Resin Article and Method for Making Same", thin plastic sheets have been increasingly used in the manufacture of lavatories. Such lavatories are made by vacuum-forming a sheet of heated acrylic resin into a shape suitable for attachment to the top of a vanity. Separate fixtures, such as faucets, mixing valves, and operating handles are then mounted along the back margin of the lavatory. Although there are numerous types of fixtures presently in use, a vast majority of them are made of a plated cast metal. The fixtures are attached over openings formed in the top surface of the lavatory, through which water pipes or control stems pass, and in most modern designs the fixture includes faucet spouts that extend upward and forward from the top surface of the lavatory to overhang the bowl.

Not only do such fixtures add considerable cost to the lavatory, in terms of both materials and labor, but the junction between the faucet and the top surface of the lavatory is difficult to clean and, therefore, tends to trap dirt. It would be desirable to have a fixture that is an integral part of the lavatory, and to reduce the amount or size of the metal parts that are attached to the lavatory to reduce cost and minimize the amount of metal that must be consumed in the fixtures. This invention is directed to such end.

SUMMARY OF THE INVENTION

The present invention comprises a lavatory made from a rigidized plastic material in which a fixture is integrally formed with the lavatory. Specifically, the lavatory may be formed from a single sheet of plastic material that includes a counter surface having a bowl formed therein, a back wall connected along the rear margin of the counter surface, and a fixture portion extending upward from the counter surface and forward from the back wall to extend with a spout out over the bowl. A mixing valve is mounted atop the fixture portion and has a handle which extends out from the fixture portion to control the magnitude and temperature of water which flows from an outlet located near the end of the spout of the fixture.

A general object of the invention is to provide a lavatory with an integrally formed fixture portion that includes a spout formed in a single molding, or vacuum-forming process, from a single sheet of material. When reinforced, the resulting product is strong, esthetically pleasing in appearance, and relatively low in cost.

Another object of the invention is to provide a lavatory which is easy to keep clean. The mixing valve handle is located on a raised platform formed by the top of the integrally molded fixture portion. As a result, dirt and grime do not accumulate around a juncture between lavatory and fixture. Additionally, the sidewalls of the fixture join the top surface of the lavatory to form a smooth, contoured surface which is easily washed.

The foregoing and other objects and advantages of the invention will appear from the following description. In the description reference is made to the accompanying drawings which form a part hereof, and in which there is shown by way of illustration a preferred embodiment of the invention. Such embodiment does not represent the full scope of the invention, and reference is made to the claims herein for interpreting the breadth of the invention.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view of a lavatory embodying the present invention,

FIG. 2 is a top plan view of the lavatory,

FIG. 3 is a cross sectional view taken along the plane defined by the line 3—3 in FIG. 2, and

FIG. 4 is a front elevation view of the lavatory.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring to FIGS. 1 and 2, a lavatory made according to the present invention from a sheet of reinforced acrylic resin is shown. Acrylic sheet material having a thickness of about 0.060 inches is first warmed by radiant heat to a plastic state and then vacuum formed to the final shape shown. A polyester-glass fiber mixture is then sprayed to the underside of the formed lavatory and allowed to sit for thirty minutes at room temperature. The resulting article is exceptional strong and resistant to delamination even under widely varying temperature conditions. For a more detailed description of the materials and method of manufacturing the lavatory, reference is made to the above cited patent application.

The molded lavatory includes a flat counter surface 1 of generally rectangular shape having a recessed bowl 2 formed in its central region. The bowl 2 intersects the counter surface 1 to define a substantially oval-shaped rim 3 that is encircled by the counter surface 1. An opening 4 located at the bottom of the bowl 2 connects with a drain pipe when the lavatory is installed.

Formed along the front and side margins of the counter surface 1 is a front flange 5 and a pair of side flanges 6 which extend downward to form a skirt around the counter surface 1. A ridge 7 is formed along the top of the flanges 5 and 6 that extends slightly above the surface 1 to contain water splashed from the bowl 2.

Formed along the rear of the counter surface 1 is an upright back wall 8. The top of the wall 8 presents a narrow shelf 9 that extends backward horizontally to abut a wall against which the lavatory is ultimately placed. The side flanges 6 extend upward to enclose the ends of the wall 8.

Centered along the transverse length of the back wall 8 is a fixture portion 10 that represents the base and spout of a faucet. This fixture 10 is integrally molded as a part of the acrylic sheet from which the entire lavatory is formed. The fixture 10 joins with the back wall 8 and the counter surface 1, and also extends forward and upward to form a spout which juts out and over the bowl 2. The fixture 10 includes a pair of upwardly convergent opposing side walls 11 which merge with and extend upward from the counter surface 1, and which also merge with and extend forward from the back wall 8. The convergence of the side walls 11 with the other surfaces is contoured with large radius curves (see par-

ticularly FIGS. 2 and 4) to form smooth connecting surfaces between the fixture 10, the counter top surface 1 and back wall 8. Not only is the contoured connection of the fixture 10 esthetically pleasing, but it also provides an easily washable surface which inhibits the accumulation of dirt. The top of the fixture 10 is enclosed by an integral top side 12 which merges with the opposing side walls 11 along their top margins so as to bridge the space between the walls 11. The top side 12 is also a continuous forward extension of the back wall shelf 9 as particularly seen in FIG. 3. It is relatively horizontal until it reaches a point over the rim 3 of the bowl 2, at which point it assumes a slight upward slope, and together with the side walls 11 this sloped portion defines the spout of the fixture. This spout portion overhanging the bowl 2 is enclosed along its bottom by an underside 13. The underside 13 is a continuous upward extension of the rear wall 30 of the bowl 2 that rises vertically as seen in FIG. 3. It curves forward to overhang the bowl 2, and joins the lower margins of the opposing spout side walls 11. A nose piece 14 encloses the forward end of the spout of the fixture portion 10.

As shown in FIGS. 1 and 3, a hot and cold water mixing valve 15 is attached to and partly contained within the fixture 10. A valve pedestal 16 is formed as a part of the top side 12 to provide a circular mounting surface 17 which is raised slightly above the top side 12, and which has a downward slope in the forward direction. A threaded portion 18 on the mixing valve 15 is received through an opening in the mounting surface 17, and a pair of nuts 19 disposed on opposite sides of the surface 17 securely fasten the mixing valve 15 to the lavatory. A control knob 20 connected to the mixing valve 15 extends above the fixture 10 and at a slight forward angle to allow easy control of its operation.

A pair of water pipes 21, one hot water and one cold water, connect with the mixing valve 15 on the underside of the lavatory. An outlet pipe 22 also connects to the valve 15 and extends forward inside the spout portion of the fixture 10. An aerator type nozzle 23 connects to the forward end of the outlet pipe 22 and extends downward through the underside 13 of the spout at a position adjacent the nose piece 14. Hot and cold water enters through the pipes 21, is combined in the mixing valve 15 and flows through the outlet pipe 22 and nozzle 23 into the bowl 2.

Contemporary lavatories generally include mechanical means for closing or stopping the drain. Such means are actuated by a series of linkages which includes a rod 24 that extends vertically from beneath the lavatory to a point immediately behind the faucet. In the preferred embodiment of the invention, provision is made for such a rod 24 to extend through an opening in a horizontal surface formed by a drain pedestal 25 located immediately behind the valve pedestal 16. A drain knob 26 is attached to the end of the rod 24 to facilitate manual operation of the linkages.

It is apparent from the above description and the drawings that the lavatory, including the fixture 10, can be formed in a single step from a sheet of plastic material 27 which serves as the smooth outer, or exposed surface of the lavatory. The underside of the plastic material 27 is then sprayed to form a reinforcing layer 28 underneath. The drain opening 4, the opening in the valve pedestal 17 and the opening in the drain pedestal 25 are made in subsequent steps. Additionally, fiber-

board, or wood strips 29 may be bonded to the underside of the top surface 1. The strips 29 bear against the interior surface of the front flange 5 and side flanges 6. Such strips provide additional rigidity to the lavatory as a whole and in particular to the flanges 5 and 6. Also, by an additional step an overflow drain (not shown in the drawings) can be added to the underside of the bowl 2. Because the lavatory is formed by a molding process, other design variations, both for esthetic purposes and functional purposes, can be easily and economically made. For example, soap dishes can be formed in the lavatory counter surface 1, to either side of the fixture 10. Also, variations can be made in the shape of the bowl 2 to add distinctive character to the lavatory.

The invention combines a lavatory with a fixture, in the form of a faucet with a spout overhanging the lavatory bowl, as a unitary member. This member is of molded, reinforced sheet plastic, and the molding includes a spout that is enclosed on its sides, top, bottom and front nose with the material of the plastic sheet, which also forms the bowl directly beneath the spout. No separate, or additional pieces are utilized for the spout of the fixture, a unitary whole is achieved from a molded sheet which overhangs itself.

The fixture portion of the lavatory must have requisite strength for supporting the hardware of a control valve, and this in part is achieved by molding surfaces of the fixture portion into the surfaces of the lavatory proper by large radius, fillet-like curves. Also, the sides of the fixture portion are convergent and are bridged by a top side which is an integral continuation of the side walls, so as to have firm supporting strength.

A further aspect of the embodiment shown is a location of the fixture portion to the immediate front of a vertical back wall to merge with the wall for additional support and strength. The fixture portion also is immediately behind a rear wall of the lavatory bowl, so that the underside of the spout of the fixture can be a smooth, uninterrupted continuation of the bowl rear wall. This facilitates molding of the fixture and lavatory as a unit in the region where the plastic sheet material is formed back, over itself to produce a spout. The fixture also rises up from the counter surface to enhance molding from a single sheet without excessive drawing out of the sheet in the molding process.

I claim:

1. In an integral lavatory-fixture combination molded of a single plastic sheet with reinforcing along the under surface of the sheet, the lavatory portion having:

- a. a substantially flat counter portion;
 - b. an upwardly rising back wall along the rear of said counter portion; and
 - c. a bowl rimmed by and receding downward from the counter portion which has a rear wall region spaced forward of said back wall;
- the combination therewith of a hollow fixture portion located in the space between said back wall and bowl rear wall region, which fixture portion has:
- d. a pair of spaced side walls rising up from and integral with said counter portion, said side walls converging with said counter portion with large radius curves, said side walls also extending forward from and being integral with said back wall and converging therewith with large radius curves;

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- e. a top side bridging between said side walls, forming a valve pedestal, and extending forward from said back wall which is an integral continuation of all said walls;
 - f. an underside which is integral with and rises from said rear wall of said bowl in an arch that extends out over the bowl to overhang plastic sheet material forming said bowl rear wall region, and which joins with and is integral with each of said side walls to form, with said side walls and said top side, a hollow spout closed on its top, bottom and sides from the single sheet of molded plastic material that overhangs said bowl;
 - g. an outlet pipe and nozzle mounted within said spout; and
 - h. a mixing valve on said pedestal having a portion inside the fixture portion connected with said outlet pipe.
2. In an integral lavatory-fixture combination molded of a single plastic sheet with reinforcing along the under surface of the sheet, the lavatory portion having:
- a. a substantially flat counter portion; and
 - b. a bowl rimmed by and receding downward from the counter portion which has a rear wall region spaced forward of the back of the flat counter portion;

the combination therewith of a hollow fixture portion located between said back of the counter portion and said bowl rear wall region, which fixture portion has:

- c. a pair of spaced side walls rising up from and integral with said counter portion, said side walls converging with said counter portion with large radius curves;
- d. a top side bridging between said side walls, forming a valve pedestal, and being an integral continuation of said walls;
- e. an underside which is integral with and rises from said rear wall region of said bowl in an arch that extends out over the bowl to overhang plastic sheet material forming said bowl rear wall region, and which joins with and is integral with each of said side walls to form, with said side walls and said top side, a hollow spout closed on its top, bottom and sides from the single sheet of molded plastic material that overhangs said bowl;
- f. an outlet pipe and nozzle mounted within said spout; and has been inserted.
- g. a mixing valve on said pedestal having a portion inside the fixture portion connected with said outlet pipe.

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UNITED STATES PATENT OFFICE
CERTIFICATE OF CORRECTION

Patent No. 3,813,706 Dated June 4, 1974

Inventor(s) Frank N. Williams

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

Column 6, line 21, strike ---has been inserted---

Signed and sealed this 1st day of October 1974.

(SEAL)
Attest:

McCOY M. GIBSON JR.
Attesting Officer

C. MARSHALL DANN
Commissioner of Patents