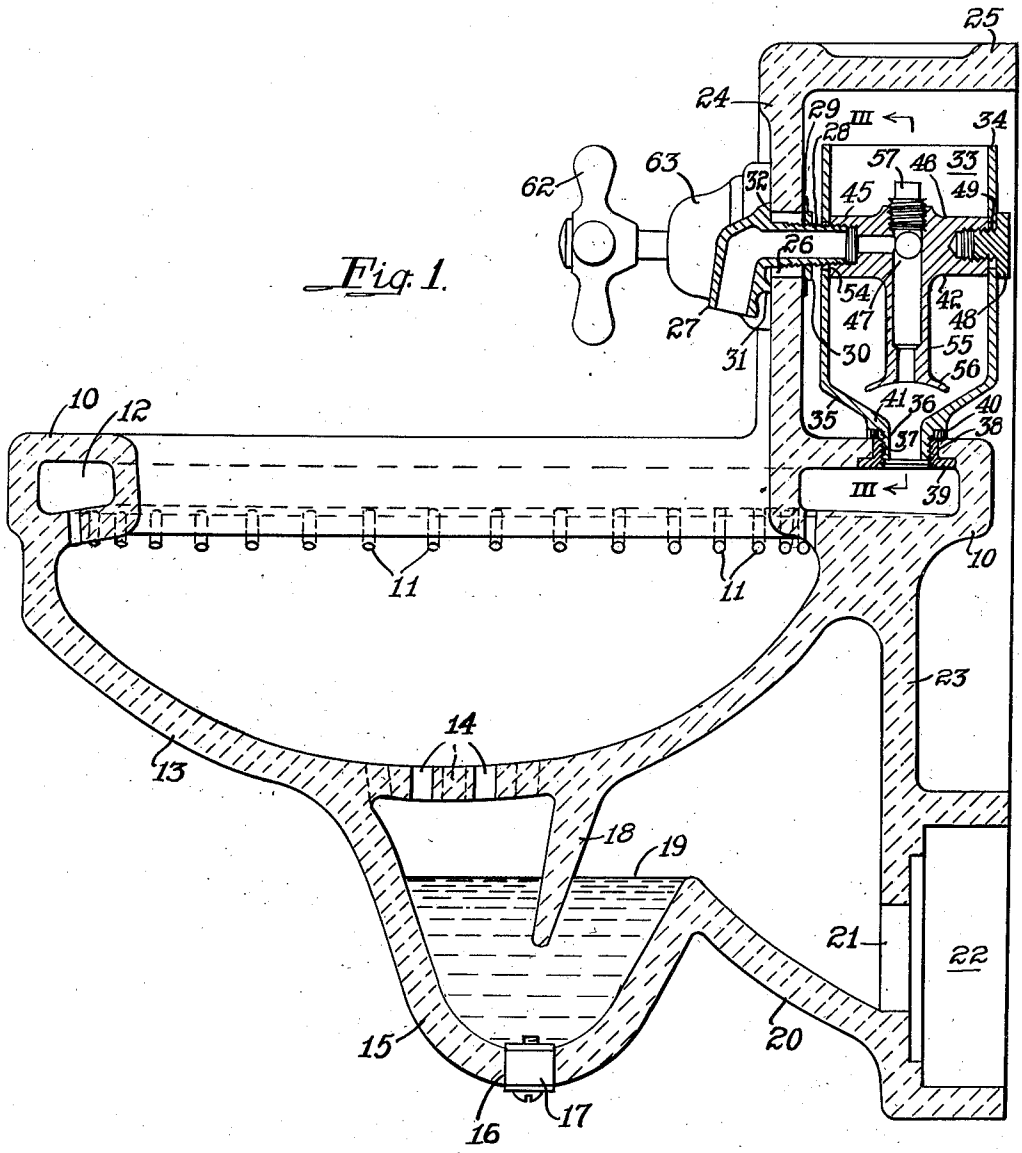
Nov. 16, 1937. V. E. SCHMIEDEKNECHT 2,099,317

DENTAL LAVATORY

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Fig. 1.



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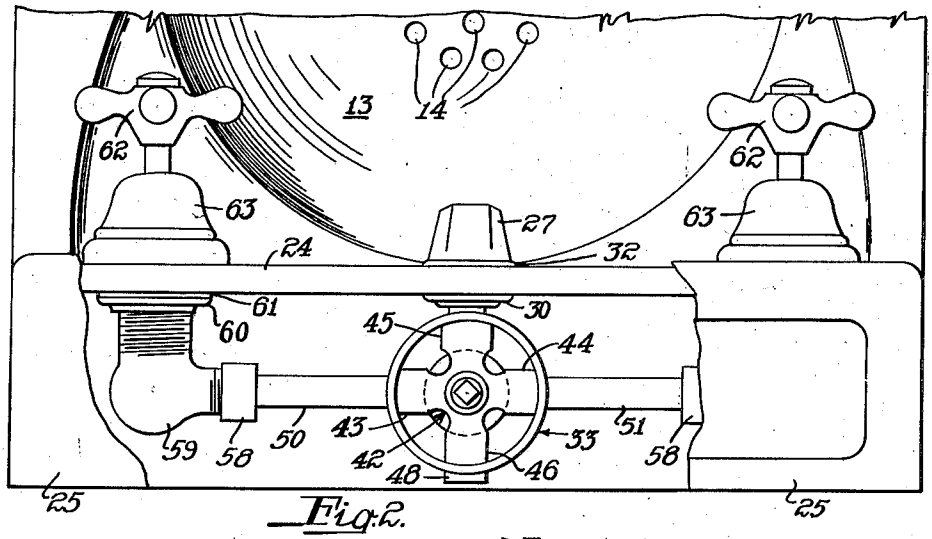


Fig. 2.

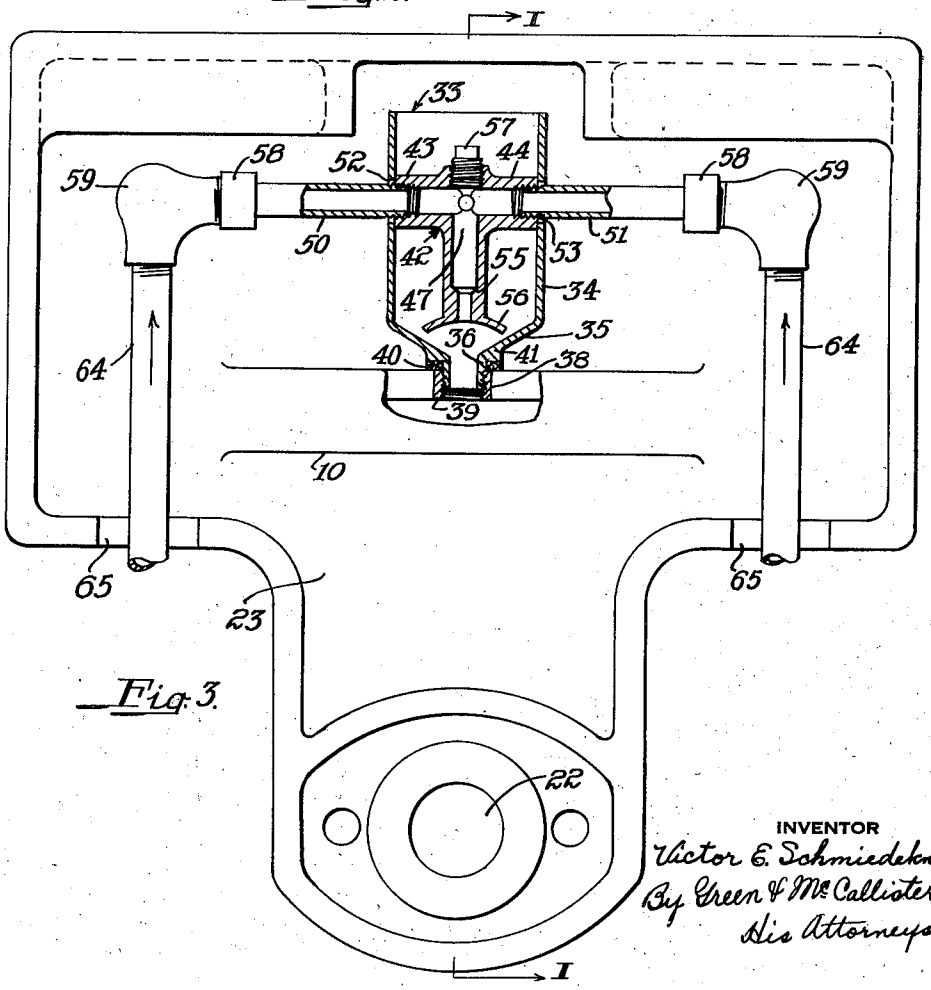


Fig. 3.

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DENTAL LAVATORY

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Application December 24, 1936, Serial No. 117,525

10 Claims. (Cl. 4—263)

My present invention relates to sanitary fixtures and more especially to a dental lavatory having new and useful features of construction and operation.

In the every-day use of dental lavatories as now constructed it is not uncommon for them to become clogged. This clogging may arise from any one of a number of sources. The sewer connection may become stopped up or even a back flow of water may occur through the sewer or the lavatory itself may become clogged either in the trapway or in the drain openings thereof. When such occurs, the water level in the lavatory rises high enough not only to cover water supply openings which are provided in the lavatory but in case the water pressure of the fresh water supply falls to a value below zero, as frequently happens particularly when a sudden or large demand is made on the water supply system at a lower level, the lavatory will back-siphon into the source of fresh water supply, thereby contaminating the same. So far as I am aware, existing lavatories do not provide against such contingencies.

The construction of my new lavatory is such as to prevent this back-siphonage and contamination and the same accordingly forms one of the objects of my present invention.

Another object of my invention is to provide a dental lavatory with a simple but effective vacuum breaking device which, under the conditions herein specificed, will quickly break any vaccum which might occur or arise in the water supply lines, due to the fall in pressure therein below zero, and which would cause contamination when the water valves are opened while the water level in the lavatory is high due to clogging.

A further object of my invention resides in the provision of a vacuum breaking device of simple construction and without moving parts which can be readily installed in a dental lavatory and which is always readily accessible.

Other and further objects and advantages of this invention reside in the various details of construction to be hereinafter set forth and in such other novelty and utility as will be appreciated by those skilled in this art.

In the accompanying drawings wherein I have illustrated a preferred embodiment of my present invention:

Figure 1 is a vertical section of a dental lavatory in accordance with the present invention taken upon the line I—I of Figure 3;

Fig. 2 is a partial plan view of the lavatory of Figure 1 with parts broken away to expose the vacuum breaker; and

Fig. 3 is a rear elevational view looking from the right of Figure 1 with the vacuum breaker and associated parts in vertical section taken on line III—III of Figure 1.

Similar numerals designate corresponding parts in the various views.

Referring to the drawings, the numeral **10** designates a hollow rim preferably, but not necessarily, made of vitreous china or similar material and provided in its inner lower surface with a plurality of washdown openings **11** circumferentially spaced around the rim. The bore or passageway through the hollow rim is indicated by the numeral **12**. The numeral **13** indicates a vitreous bowl which is preferably but not necessarily integral with the hollow rim **10** and which is provided at its bottom or center with the drain openings **14**.

Disposed below and extending integrally from said bowl is the trap-forming vitreous member **15** which is substantially semi-circular in configuration and in which water normally stands to the level shown in Figure 1. The bottom of the trap-forming member **15** is provided with a drain aperture **16** which is normally closed by a suitable drain plug **17**. Seal wall **18** extends downwardly from said bowl partially into said trap forming member **15** thus forming a seal passage indicated by the numeral **19** between said seal wall and one side of the trap forming member. A vitreous web designated by the numeral **20** serves to guide water spilling over from said trapway into an outlet or discharge orifice **21** which leads to a sewer or other waste educt **22**. Another vitreous web designated by numeral **23** extends from the under side of said rim **10** and completes the formation of said outlet and educt.

Rising vertically from said rim at one side or end thereof is the vitreous wall **24** which terminates in a right-angled vitreous flange **25**. This wall, as shown in Figure 2 especially, is centrally provided with an aperture **26** adapted to receive the spout member **27**. As will be observed from Figure 1, this spout, which may be made of metal, is tubular and exteriorly threaded at **28** on its rearward end. A non-metallic gasket **29** is placed over said end and abutting the inner surface of said wall **24** and a tension nut **30** is screwed onto said spout to hold the same firmly in position. Proper seating and positioning of said spout against the outer surface of said wall **24** is assured by the flange-like portions **31**, **32** provided on said spout as shown.

Centrally disposed behind said wall **24** is a vacuum breaker which is designated as a whole by

the numeral 33. This vacuum breaker consists of a hollow cylindrical body member 34 which tapers conically near its lower end at 35 and terminates in a relatively restricted terminal portion 36 which is threaded at 37 on its outer surface and this restricted terminal portion extends at least partially through the upper wall of rim 10 as shown, the rim wall being provided with an aperture 38 therethrough for this purpose. A litharged spud 39 is set into said rim aperture and is internally threaded for the reception of the restricted terminal portion 36 of the body member 34, spud gasket 40 being interposed between the spud and wall and a somewhat annular thickened portion 41 contiguous to said restricted terminal portion 36 thus insuring a tight joint without liability of fracturing or chipping the vitreous rim.

Disposed within said hollow cylindrical body member 34 is the spider-shaped member designated by the numeral 42. The configuration of this member will be understood from Figs. 1 and 3 especially. The spider-shaped member consists essentially of four arms 43, 44, 45, 46 radially disposed at right angles to each other, of which 43, 44 and 45 are hollow, that is provided with passageways communicating with a central vertical passageway 47 through the spider-shaped member. Arm 46 is tapped for the reception of a securing screw or other fastening instrumentality 48 and the body member 34 is provided with a suitable aperture 49 for the passage of screw 48 therethrough. Arms 43, 44 are internally threaded near their outer ends for the reception of threaded water slip pipes 50, 51, suitable apertures 52, 53 being formed in the body member 34 to permit connection of these pipes one of which is connected to a source of cold water and the other of which is connected to a source of hot water. The third hollow arm 45 of said spider-shaped member is likewise internally threaded near its outer end for the reception of the threaded end of spout member 27, heretofore described, and an aperture 54 is provided in hollow cylindrical member 34 to enable this connection to be made.

The spider-shaped member 42 is provided with a depending tubular extension 55 terminating in a concavo-convex annular flange 56. It will be noted that the periphery of this flange approaches but is spaced from the adjacent tapered conical portion 35 of the hollow cylindrical body member 34. The vertical passageway 47 through the spider also extends through the extension 55 but is reduced or constricted, as shown, near the lower end of said extension. The upper central portion of the spider-shaped member 42 is internally threaded for the reception of a threaded pipe plug 57.

Water slip pipe 50 is provided with a slip joint nut 58 by means of which it is connected to water valve 59 which is threaded at one end to receive said slip joint nut and which is threaded at the other end for the reception of tension nut 60 between which and the rear surface of the wall 24 is interposed a gasket member 61. A suitable valve handle 62 is connected to said valve the stem of which is provided with an escutcheon 63. Water pipe 51 is similarly constructed as is indicated by the use of the same numerals on the parts thereof. Suitable connecting pipes 64 extend from suitable sources of water supply and pass through suitably provided apertures in the lavatory as shown at 65 in Figure 3.

Normal Operation

In the normal operation of the lavatory, when the hot and/or cold water valves 59 are opened, the water under normal head flows through slip pipes 50 and 51 into spider 42 where it is tempered and divided, that is, the hot and cold water are mixed, in accordance with the extent to which the respective valves are opened and the mixed or tempered stream is caused to flow partly through spout 27 and partly into hollow rim 10 where it discharges for washdown purposes into the bowl 13 via washdown openings 11. Water from both the rim and the spout drains through drain holes 14 in the bottom of the bowl and passes into trapway 15 and thence eventually to the educt 22.

Abnormal operation

Since, in connection with dental work, waste material is frequently discharged into the bowl and/or may accidentally fall thereinto, such as dental cement, wads of cotton, and porcelainic materials, etc., it not infrequently happens that the lavatory becomes clogged due to the closing of the drain openings 14. Sometimes also the trapway becomes clogged by material that in some manner passes through the drain holes and accumulates in the trapway. The sewer connection may likewise become clogged or may even back up in some instances and when any or all of these conditions exist, the water level rises so high as to fill the bowl above the washdown apertures 11 in the rim. This condition may also be accompanied by a temporary fall in the head or pressure of the water supply below zero as not infrequently happens when sudden demand is made upon the water supply by a large user thereof and/or at a lower level than the lavatory.

In prior lavatories this creation of a vacuum in the water lines will cause back-siphonage from the bowl into the water supply pipes when the water valves are opened, thus contaminating the water supply. Where the lavatory is provided with the present vacuum breaker, however, the vacuum will be broken immediately upon opening of the water valves by a rush of air from the open top of the hollow cylindrical body member 34 up through depending spider extension 55, into the hollow spider arms 43, 44 and thence into the water lines. Air also is sucked in through spout 27 but this alone is not sufficient for the purposes hereindescribed. Thus, air being immediately sucked into the water supply pipes, water standing in the bowl is prevented from being siphoned back into the pure water supply.

It is thus apparent that the dentist or his attendant need give no special attention whatsoever to the lavatory since it is impossible for water standing in the lavatory to in any way siphon back into the water supply system. Therefore, my present invention not only embodies advantages such as those above set forth, but at the same time prevents any unsanitary condition arising in the water supply system from this source and in a building where, for example, considerable dental operations are carried out from time to time, this is no inconsiderable item.

While I have stated that in accordance with the preferred embodiment of my invention the lavatory is made of vitreous china or other vitreous material, I am not restricted thereto because I may make the lavatory entirely of metal or of any other suitable or available material without departing from the principles and spirit

of the present invention. Likewise, I am not restricted to the precise details as described and illustrated but I may vary therefrom in various particulars such as sizes, shapes, and materials, so long as such are covered by the subjoined claims. While I have also indicated that the preferred embodiment of my invention contemplates an integral or unitary rim, bowl, and trapway, I am not restricted in this particular because such may depend in part upon the particular materials used and in part upon the configuration of the various parts involved. It is, therefore, within the purview of my present invention to make the lavatory of a number of parts as experience and good judgment may dictate and to suitably assemble and connect such parts to produce the complete lavatory.

What I claim as new and desire to secure by Letters Patent is:

1. A dental lavatory comprising a bowl having drain openings therein, a hollow rim superjacent said bowl and provided with washdown openings communicating with said bowl, a trapway subjacent said bowl and communicating with said bowl via said drain openings, a discharge leading from said trapway, a spout operatively associated with said lavatory and means for irreversibly delivering water to said bowl irrespective of the conditions existing in said bowl and its associated water supply system.

2. A dental lavatory comprising a bowl having drain openings therein, a hollow rim superjacent said bowl and provided with washdown openings communicating with said bowl, a trapway subjacent said bowl and communicating with said bowl via said drain openings, a discharge leading from said trapway, a spout operatively associated with said lavatory and means for irreversibly delivering water to said bowl irrespective of the conditions existing in said bowl and its associated water supply system, said means being constructed to deliver water to said bowl partly through said spout and partly through said hollow rim.

3. A dental lavatory comprising a bowl having drain openings therein, a hollow rim superjacent said bowl and provided with washdown openings communicating with said bowl, a trapway subjacent said bowl and communicating with said bowl via said drain openings, a discharge leading from said trapway, a spout operatively associated with said lavatory and means for irreversibly delivering water to said bowl irrespective of the conditions existing in said bowl and its associated water supply system, said means being constructed to deliver water to said bowl partly through said spout and partly through said hollow rim and including a vacuum breaking device interconnected between said water supply system, said spout and said hollow rim.

4. A dental lavatory comprising a hollow rim having wash-down apertures therein, a bowl below said rim and having drain openings in its bottom, a trapway associated with said bowl and lying below said drain openings, means for delivering water into said rim, said water subsequently passing via the washdown openings and the drain openings to said trapway and thence to a discharge line, and means for preventing delivered water from passing back into the sources of water supply.

5. A dental lavatory comprising a hollow rim having washdown apertures therein, a bowl integral with said rim and having drain openings in its bottom, a trapway formed integrally with said bowl and lying below said drain openings and means for delivering water into said rim and bowl, said means being so constructed and arranged as to prevent delivered water from passing back into the sources of water supply under any conditions.

6. A dental lavatory comprising a hollow rim provided with washdown apertures, a bowl integral with said rim and provided with drain openings, a trapway beneath said bowl and communicating with a discharge, means for delivering water to said bowl, said means being so constructed as to divide the stream of water into two portions, one of which is delivered to the bowl via a spout and the other of which is delivered to the bowl via a hollow rim and its washdown apertures.

7. In a dental lavatory of the type described, a hollow rim via which water is adapted to be delivered to said lavatory, a cylindrical body member communicating with said hollow rim, a spider disposed in said cylindrical body member and communicating with sources of water supply, a delivery spout secured to said spider adapted to deliver a portion of water from said sources to said lavatory, said spider having a depending tubular extension provided with an annular flange at its lower end and communicating with the sources of water at its upper end, the construction being such that upon clogging of the lavatory and upon the arising of a negative pressure in the water source back siphonage of water from said lavatory is prevented.

8. In a lavatory provided with a hollow rim, a spout and means for conducting water to said rim and spout, a vacuum breaking device interposed between said hollow rim, said spout and said sources of water supply whereby when said lavatory is clogged and a negative pressure arises in said water supply the partial vacuum thus created is relieved upon opening the water supply by the sucking of air into said vacuum breaker and thence into said sources of supply.

9. In a lavatory provided with a hollow rim, a spout and means for conducting water to said rim and spout, a vacuum breaking device interposed between said hollow rim, said spout and said sources of water supply whereby when said lavatory is clogged and a negative pressure arises in said water supply the partial vacuum thus created is relieved upon opening the water supply by the sucking of air into said vacuum breaker and thence into said sources of supply, said vacuum breaker comprising a hollow cylindrical body portion provided with a spider having a plurality of air passages therethrough which communicate with said hollow rim, said spout and said sources of water supply.

10. A dental lavatory of the type described comprising a hollow vitreous rim having annularly spaced washdown openings in the lower inner side thereof, an integral vitreous bowl provided with drain openings at its bottom, a semi-circular trapway disposed below and extending from said bowl, a seal wall projecting downwardly from said bowl into said trapway and a discharge outlet communicating with said trapway, said hollow rim having an integral upstanding vitreous wall provided with a centrally disposed spout, a hollow cylindrical vacuum breaker body member disposed behind said upstanding wall, a spider shaped member disposed within and secured to said cylindrical body member, said spider shaped member being provided with a plurality of hori-

zontal tubular arms, said spout being secured into said body member and spider so as to communicate with one of said tubular arms, water supply conduits connected into said body member and spider shaped member so as to communicate with other tubular arms thereof, a depending tubular extension on said spider having a vertical passageway extending therethrough, and a plug member closing the upper end of said vertical passageway, the construction being such that when the water level in said bowl rises above said washdown openings and when the water supply is opened while a negative pressure exists in said water supply conduits air is sucked through said tubular extension and through said spout and is thence transmitted to said water supply conduits for vacuum breaking purposes.

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