(No Model.)

W. B. PARSONS, Jr.

CONSTRUCTION OF TROUGHS FOR WATER CLOSETS.

No. 384,175. Patented June 5, 1888.

Fig. 1.

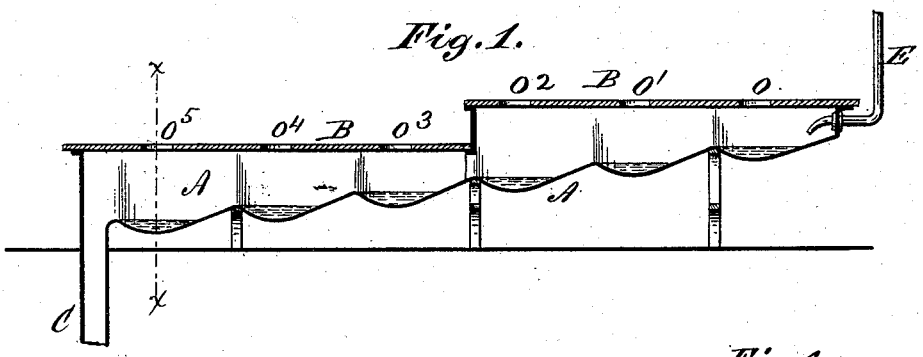


Fig. 6.

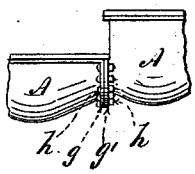


Fig. 5.

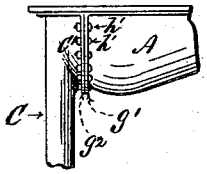


Fig. 2.

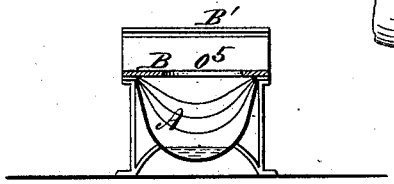


Fig. 3.

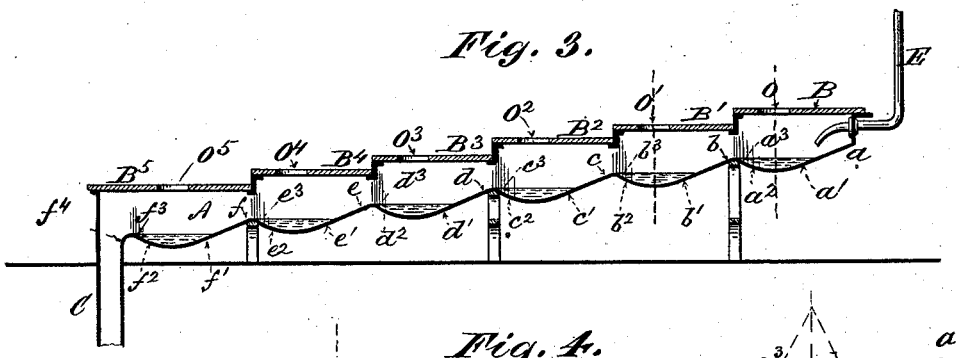
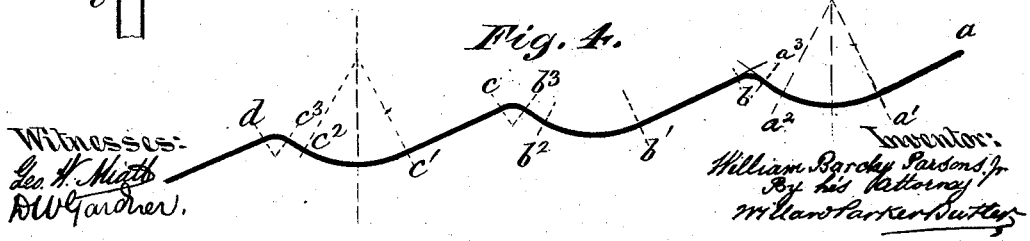


Fig. 4.



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William Parker Sutton

UNITED STATES PATENT OFFICE.

WILLIAM BARCLAY PARSONS, JR., OF NEW YORK, N. Y.

CONSTRUCTION OF TROUGHS FOR WATER-CLOSETS.

SPECIFICATION forming part of Letters Patent No. 384,175, dated June 5, 1888.

Application filed October 7, 1887. Serial No. 251,694. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM BARCLAY PARSONS, Jr., a citizen of the United States, and a resident of the city of New York, in the county of New York and State of New York, have invented certain new and useful Improvements in the Construction of Troughs for Water-Closets, of which the following is a specification.

My invention relates to the construction of troughs for water-closets of the character of that described in Letters Patent of the United States, No. 332,428, heretofore granted to me upon the 15th day of December, 1885, upon which form of water-closet the herein-described form is an improvement.

The invention consists in the peculiar form or shape of the trough and the arrangement of the seats, as hereinafter described, the object of the improvement being, first, to prevent soiling of the sides of the trough under the seats, but more especially under the seats near the discharge-pipe, and, second, to effect better flushing of the basins and to avoid the production of eddies and back currents in the basins when the closet is flushed. This latter object is accomplished by making the basins of such form that a minimum resistance will be offered to the stream of water which performs the operation of flushing.

The invention will be best understood by reference to the accompanying sheet of drawings, in which—

Figure 1 shows a longitudinal section of the improved form of closet; Fig. 2, a vertical cross-section of the same on the line x x of Fig. 1; Fig. 3, a modified form showing an improved arrangement of the seat-board; Fig. 4, an outline of the longitudinal contour of the trough-bottom; and Figs. 5 and 6 are detail views of the method of joining the sections of the trough-bottom together.

Similar letters refer to similar parts throughout the several views.

In the views, A represents the trough; B B′, the seat-board.

C is the outlet or waste pipe leading from the trough A, which is preferably made in the shape shown, and connected with the sewer or other place provided for the disposal of refuse matter in any convenient manner; and E is the feed-pipe through which water is introduced for the purpose of flushing the trough.

In the present improved form of trough the inclined sides and independent basins, placed at lower levels therein and provided with separate dams, as described in the aforesaid Letters Patent, No. 332,428, are dispensed with, and in place thereof the walls and bottom of the trough are made in cross-section in the form of the arc of a circle of varying radius, according to the width of the seat-board. The sides of the trough are made of inclined flat surfaces, as shown in Fig. 2, and under each opening in the seat-board the bottom of the trough is made to incline downward in the direction of its length, and is composed of a series of curves and inclined straight lines so connected with each other as to form a series of basins at different levels. Thus in the views the seat-board, as there shown, is provided with six openings, O O′ O^2 O^3 O^4 O^5, and the inclined bottom of the trough is composed of six combinations of curves and lines, represented by a a' a^2 a^3, b b' b^2 b^3, c c' c^2 c^3, d d' d^2 d^3, e e' e^2 e^3, f f' f^2 f^3, as there shown.

The exact construction of the trough-bottom and the peculiar combination of curves and lines which make up the same will be best explained by reference to Fig. 4, which shows the contour line of the bottom. The trough commences to incline under the extreme right-hand opening O at the point a, and its longitudinal direction is at first either very slightly curved or in a straight line to the point a', when it takes the direction of the arc of a circle having its center in a line drawn vertically through the seat-board to the point a, which point is equidistant with a' from said vertical line. From the point a^2 the trough inclines slightly upward in a straight line to the point a^3. From the point a^3 to the point b the surface follows the arc of a circle drawn tangent to the lines a^2 a^3 b b^3, as shown in Fig. 4. At the point b a new basin begins whose longitudinal contour is substantially similar to that of the first basin previously described.

In practice the arcs a^3 b, b^3 c, &c., may, if desired, be made to unite directly with the arcs a' a^2, b' b^2, &c. If desired, the inclined straight lines a a' b b', &c., may be replaced by inclined curved surfaces of very slight curvature; but this is not material, as the gist of the improvement consists in the replacing of the dams by curved surfaces, which will offer

the least possible resistance to the water in the operation of flushing, and prevent the formation of back currents and eddies in the curved basins. As a consequence of this construction, the bottom of the trough has an irregularly-curved inclination, which is generally constant, but is nevertheless composed of separate basins, and the dams described in the aforesaid Letters Patent, No. 332,428, are replaced by a series of ridges formed by the short curved surfaces a^3 c^3, b^3 c, &c., which unite the various parts of basins in the manner shown. These ridges perform the same function as the dams do in the invention described in the Letters Patent previously granted, and at the same time do not impede the flushing of the trough to the same degree by reason of their peculiar shape.

The object of making the trough of the peculiar shape above described is to avoid the formation of eddies or the whirling of the water in the basins when the closet is flushed. It will be observed that no vertical surfaces are anywhere opposed to the water, and at such points where resistance is to be offered to the current, for the purpose of retaining some water in the basins after flushing, the resistance is offered by an inclined surface, which retards the water very gradually and prevents all eddying of the current.

The operation of the water-closet is substantially the same as that of my previously-patented water-closet. The water is admitted into the upper end of the trough through the pipe E, and enters the space under the opening O, flows through the first basin, washing all solid matter therein over the ridge a^3 b into the next basin in the trough b' b^2, thereby flushing that basin, the operation continuing in this manner until the whole contents of the trough are discharged throughout the outlet C, and the trough is thoroughly cleansed. As the bottom of the trough is curved at all points except where it inclines in a straight line, the friction offered to the water entering and the solid material is reduced to a minimum, and there being no corners or vertical surfaces in the trough at any single point, it is impossible for solid material either to collect anywhere or to become lodged. By making the trough in this peculiar manner it is possible to retain the effect of the separate basins, the advantages of which, for the purposes of scouring or flushing, were set forth in my previous patent without the use of the dams, while the ridges a^3 b b^3 c c^3 d, &c., after the trough has been scoured, cause an amount of water to be retained in each basin proportionate to their height, so that the trough is never without a given amount of water.

In practice it may be found that where the openings in the seat-board nearest to the discharge-pipe are used the water is so far below the level of the seat that the sides of the trough are not thoroughly cleansed from matter falling upon them. To obviate this difficulty, the seat-board is made in two or more sections, according to the length of the trough, and each section is made slightly lower than the other. Thus in Figs. 1 and 2 a trough is shown provided with six openings. The trough is made in two sections arranged for three openings in each section, and the sections are bolted or connected together in the manner shown in Figs. 5 and 6.

Fig. 5 shows the manner of connecting the end section of the trough to the waste-pipe C, and Fig. 6 shows the manner of connecting the ends of any two intermediate sections.

The ends of the intermediate sections, as shown in Fig. 6, are provided with the flanges g g', which are bolted together by the bolts h h, &c., passing through holes in the flanges. The upper portion of the pipe C is enlarged, in the manner shown in the views, into a species of funnel, C, which is of such shape and dimensions that it can be connected with the last basin, f f^3, in the end section of the trough, the final ridge or curve f^3 f^4 being made a part of the funnel-shaped portion C' of the waste-pipe. The mouth of this funnel-shaped portion of the waste-pipe is provided with an exterior flange, g^2, of the shape shown, which is fitted to the flange g' of the end section, the two being bolted together by the bolts h' h', &c., in the manner shown in Fig. 5. The section connected with the outlet-pipe is so placed that the seat-board will be considerably lower than the seat-board of the other section of the trough, thereby bringing the seat-board nearer to the level of the water in the trough and obviating all danger of soiling the sides of the latter.

It will be obvious from the views that the trough may be made in smaller sections, if desired; or, if it is desired to keep the seat-board at a fixed distance above the water in each basin, the top of the trough may be so formed that a separate seat-board may be used for each basin, thus giving the seat-board the appearance of a set of steps, the height of each of which above the other being dependent upon the fall of the water from one basin of the trough to the next. This form of construction is shown in Fig. 3.

I claim as my invention—

1. In a water-closet, a trough formed with a series of basins located at different levels, each having curved sides and being curved upon the bottom, substantially in the manner described, so connected with each other by curved surfaces that a ridge or elevation is formed between the same.

2. In a water-closet, the combination, substantially as hereinbefore set forth, with the trough provided with a series of basins located at different levels, of a seat-board composed of a series of independent boards covering each basin, placed at different levels, and so constructed and arranged that the openings therein shall be in each case the same distance above the level of the corresponding basin in the trough.

3. In a water-closet, a trough composed of

detachable sections so constructed and arranged that any number of said sections may be joined together, each section being formed into a series of basins located at different levels and curved upon the bottom, substantially in the manner described, said basins being each so connected with each other by curved surfaces that a ridge or elevation is formed between the same.

Signed at New York city, in the county of New York and State of New York, this 28th day of September, A. D. 1887.

WILLIAM BARCLAY PARSONS, JR.

Witnesses:
HARRY DE B. PARSONS,
EDWIN T. RICE, Jr.

Correction in Letters Patent No. 384,175.

It is hereby certified that the name of the patentee in Letters Patent No. 384,175, granted June 5, 1888, for an improvement in the "Construction of Troughs for Water Closets," was erroneously written in the grant "William Barclay Parsons, jr.," whereas said name should have been written *William Barclay Parsons*, evidence having been presented to the Office that by reason of the death of his father the "jr." no longer formed a part of the patentee's name or signature; and that the Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed, countersigned, and sealed this 12th day of June, A. D. 1888.

[SEAL.]

D. L. HAWKINS,
Assistant Secretary of the Interior.

Countersigned:

BENTON J. HALL,
Commissioner of Patents.