2 Sheets—Sheet 1.

W. WASSON.

Process and Apparatus for Bathing.

No. 211,874. Patented Feb. 4, 1879.

Fig. 1.

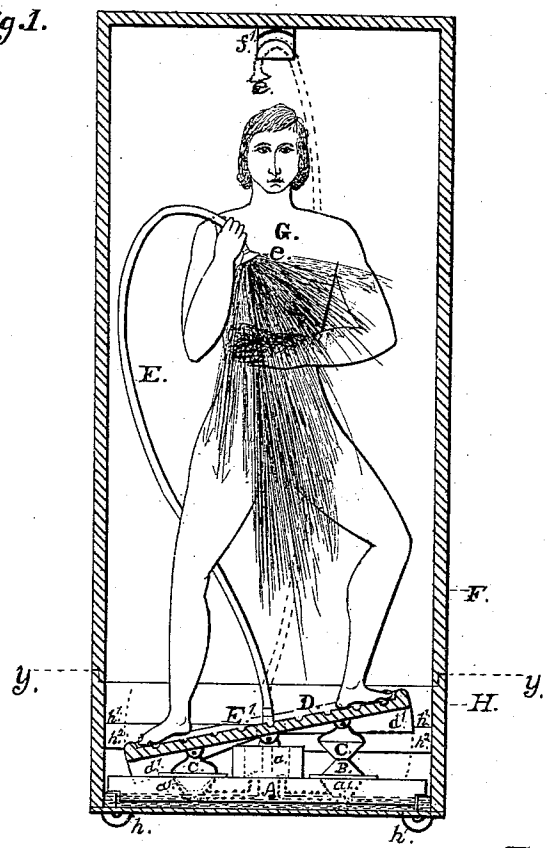


Fig. 2.

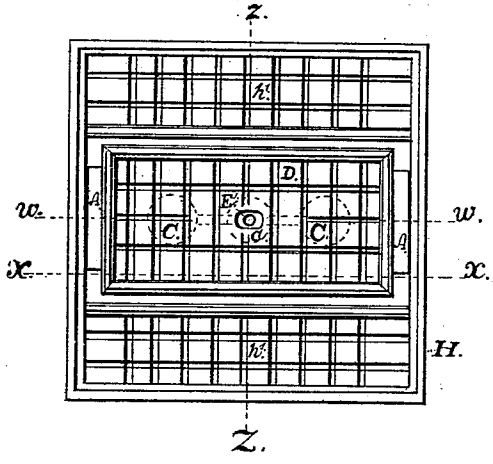
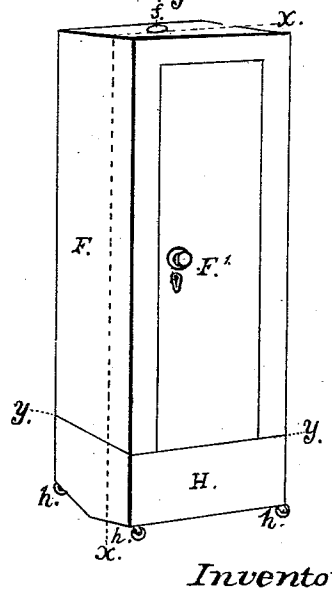


Fig. 3.



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2 Sheets—Sheet 2.

W. WASSON.

Process and Apparatus for Bathing.

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Fig. 4.

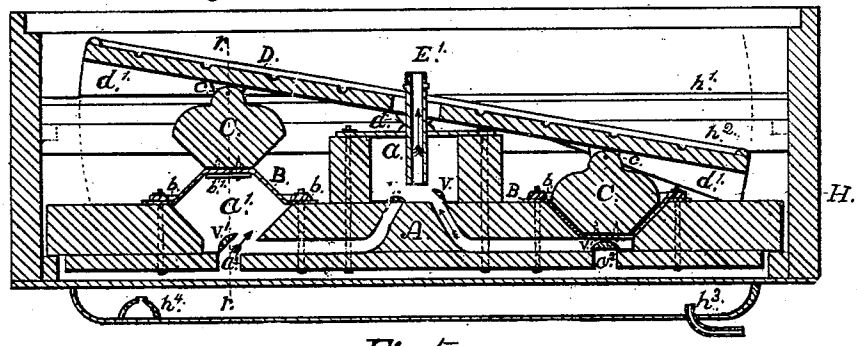


Fig. 5.

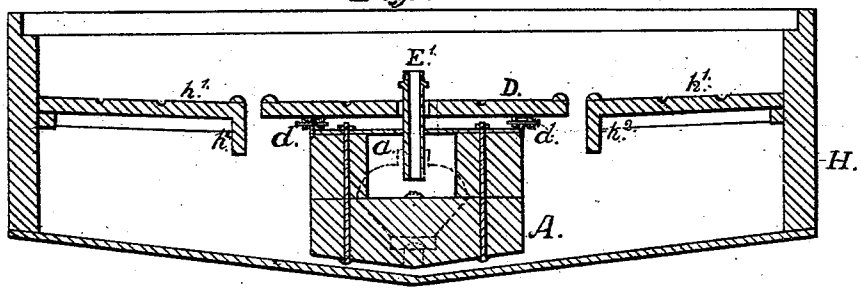


Fig. 6.



Fig. 9.



Fig. 7.

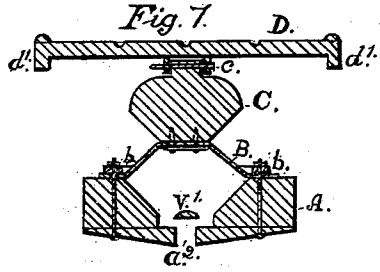


Fig. 8.

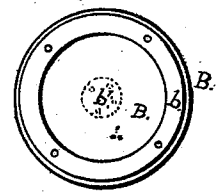
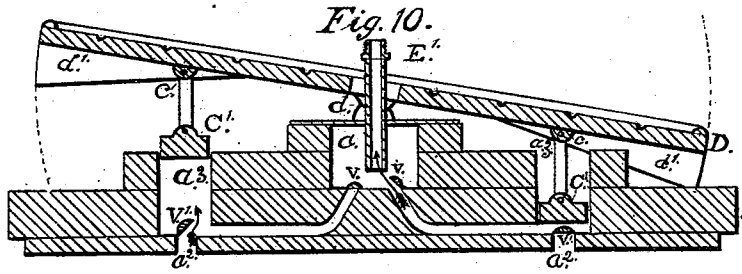


Fig. 10.



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Inventor:

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UNITED STATES PATENT OFFICE.

WARREN WASSON, OF CARSON CITY, NEVADA.

IMPROVEMENT IN APPARATUS FOR BATHING.

Specification forming part of Letters Patent No. **211,874**, dated February 4, 1879; application filed September 20, 1877.

To all whom it may concern:

Be it known that I, WARREN WASSON, of Carson City, in the county of Ormsby and State of Nevada, have invented a new and useful Process and Apparatus for Bathing, which process and apparatus are fully set forth in the following specification and claims, reference being had to the accompanying drawings.

This invention relates to that class of processes and apparatus for bathing by means of a shower, stream, or douche bath, and has for its object to furnish a continuous shower, stream, or douche bath for any desired length of time with the same liquid, and without addition, waste, or loss of liquid, said shower, stream, or douche to be under the positive and instantaneous control of the bather as to quantity, force, direction, and duration, said bath to have economical, cleansing, health-restoring, and health-preserving peculiarities.

My invention consists in the process (and apparatus for carrying it into effect) of bathing by means of a continuous or slightly intermitting circuit of the same bathing-liquid, which, in each of its revolutions, is discharged upon the bather in either a shower, stream, or douche, as desired.

Heretofore, when shower, stream, or douche baths have been employed, the liquid after leaving the bather has not been again used; but the supply to continue the bath has been kept up by additional liquid. Therefore, a distinguishing feature of my process is that the liquid is used over and over during the bath.

Another peculiarity of my process resulting from this feature is that when hot liquid is used it gradually but rapidly cools during the bath; also, when cold liquid is used, it gradually but rapidly rises in temperature during the bath, as will be more fully set forth hereinafter.

The small amount of liquid required to produce a long-continued shower, stream, or douche bath constitutes another distinguishing feature of my process.

In the accompanying drawings, Figure 1 is a sectional elevation of my improved bathing apparatus, taken through the line *x x*, Figs. 2 and 3, and shows a position of bather when bathing by my process. Fig. 2 is a top view of tank H, which is the bottom part of chamber F. It is taken through line *y y*, Figs. 1 and 3, and shows the plan of tank H, removable floors h^1, and pump A. Fig. 3 is a perspective view of the exterior of my improved bathing apparatus. Fig. 4 is a detail section taken through line *w w*, Fig. 2. Fig. 5 is a detail section taken through line *z z*, Fig. 2. Fig. 6 is a detail view of plungers C of pump A. Fig. 7 is a detail cross-section of pump A, taken through line *r r*, Fig. 4. Fig. 8 is a top view of diaphragm B and annular plate *b* of pump A. Fig. 9 is a detail view of plate *b'* of pump A. Fig. 10 is a detail longitudinal section of pump A as though taken through line *w w*, Fig. 2, showing plungers C' and chambers a^3, which are modifications of plungers C and chambers a^1.

My improved bathing apparatus, as shown in Figs. 1 and 3, is portable, being mounted on casters *h*. It may, however, be constructed as a permanent fixture.

It consists of a room or chamber having entrance and exit door, a window to admit light, and a pump arranged and operated within said chamber to repeatedly raise and discharge the same bathing-liquid in a continuous shower, stream, or douche, the chamber being so constructed that the liquid will not escape therefrom during a bath.

The room or chamber is made in two parts—viz., tank H and chamber F, merely for convenience in construction and transportation. Tank H is water-tight except its top, which is open. Chamber F rests on the top of tank H. Its lower inside edges are let down into the top of tank H, so that the liquid will not escape in passing the joint. Chamber F has a window, *f*, on top, and an entrance and exit door, F', in front.

Attached centrally on the under side of the top of chamber F is hook *f'*, having an arched way or groove formed in it, so as to hold flexible pipe-hose E in a curved position, and discharge the liquid on the bather.

The bottom of tank H slopes downward slightly from each side to the center, so that the liquid will concentrate immediately at the points of suction of pump A. Removable floors h^1 are for the bather to stand on when not standing on oscillating beam D. They

rest on projections formed on the inside and near the top of tank H, and slant inwardly toward beam D, to facilitate the flow of the liquid off into tank H.

The upper surface of floors h^1 and beam D are checkered with shallow grooves to prevent the bather from slipping. On the under inner edges of floors h^1 are projections h^2, extending down below the point of oscillation of beam D. On the under outer edges of beam D are projections d'. Projections h^2 and d' prevent any solid object from being caught between the edges of floors h^1 and oscillating beam D.

The novel features of pump A consist, mainly, in the peculiar form and arrangement of its parts to adapt it to this purpose. It is constructed as low as possible, that it may occupy the least amount of space in the height of chamber F. It rests on cleats projecting at each end of tank H, which support it above the bottom of tank H just sufficient to allow the liquid to pass under it to valves V V'.

d are pivots, upon which beam D oscillates. Pivots or hinges c connect plungers C with beam D. B are flexible diaphragms, made of leather or other suitable material. They form the top part of chambers a^1. Their outer edges are secured to the body of pump A with annular plates b. The lower ends of plungers C are secured centrally to the top of diaphragms B with plates b'. The lower part of chambers a^1 are formed in the body of pump A. The sides flare outwardly at an angle of about forty-five degrees, and the lower parts of plungers C are shaped to fit therein.

a is an air-chamber. V V' are valves, alternately opening and closing in its bottom over passages connecting it with chambers a^1. E' is a short pipe, extending from near the bottom of air-chamber a, out through its top, and up through an oblong hole in the center of beam D. Beam D oscillates freely without touching pipe E'. Flexible pipe-hose E is attached to upper end of pipe E'. On the other end of hose E is hose-sprinkler nozzle e. Valves V V' alternately open and close over suction or inlet passages a^2 in the bottom of chambers a^1.

Plungers C' and chambers a^3, as shown in Fig. 10, are modifications of plungers C and chambers a^1. Plungers C' are solid pistons, packed and working vertically in chambers a^3. Chambers a^3 are of the same diameter from top to bottom. I prefer the improved plungers C, with flexible diaphragms B and flaring chambers a^1, as being less liable to get out of order, and better adapted to this purpose.

On the bottom of tank H, Fig. 4, are shown two methods of heating the liquid while it is in tank H when it is desired to do so. h^3 is a gas-burner, and h^4 is a spirit-lamp. When either of these methods is to be employed, tank H must be constructed with a metallic bottom adapted to that purpose. I prefer to heat the liquid before putting it in tank H.

G, Fig. 1, represents a bather taking a shower-bath by my process. The end of hose E is held and the shower directed by one hand, while the other hand is left free to apply soap or the scrubbing-brush. By suspending the end of hose E on hook f' the shower would be discharged on the bather without the aid of either hand. By removing hose-sprinkler e and leaving the end of hose E open, it will produce what I call a "stream" or "douche" bath.

The bather stands with one foot on one side and the other foot on the opposite side of the center of beam D of pump A, which he operates by throwing his weight alternately on either foot, which oscillates beam D, and alternately raises and lowers plungers C. As one of the plungers C is raised it carries with it its diaphragm B, valve V' opens, and liquid is raised from the bottom of tank H up into chamber a^1. At the same time the other plunger C is lowered, depressing its diaphragm B into chamber a^1, which closes its valve V', and forces the contents of chamber a^1 out and up through valve V into air-chamber a, from thence up pipe E' into, through, and out of hose E, forming the shower, stream, or douche, as the case may be. The liquid then falls into tank H, to be again raised and discharged, as above described, thus forming a continuous circuit with the same liquid.

The bather has at all times absolute and instantaneous control of the action of pump A, by which he regulates the quantity, force, and duration of the shower or stream. The farther his feet are from the center of beam D the greater will be his power to increase the force, and consequently the quantity, of the shower or stream. With his feet on the ends of beam D, as shown by the position of bather G, Fig. 1, he can, by the equalization of his weight on beam D, almost instantly change the force of the shower or stream from the most powerful to the most gentle flow, or stop its flow and again reproduce it at will without changing the position of his feet on beam D. This constant control of the force, quantity, and duration of the shower or stream, as above set forth, is another distinguishing feature of my improved bathing process.

About one gallon of liquid is the minimum amount with which a continuous shower or stream can be maintained by my process in this apparatus; nor is it desirable to bathe the entire person with a less amount. The word "liquid," as used in this specification, means any proper bathing-liquid—such as water, either pure or holding various substances in solution, such as soap, salt, &c., or water medicated or perfumed, natural mineral spring water, ocean or sea water.

The bathing-liquid being provided of the kind, quantity, and temperature desired, it is introduced into tank H by pouring it from a pitcher, bucket, or any suitable vessel; or, in case the apparatus is a stationary fixture, it may have an inlet-pipe in the usual manner of bath-tubs. At the conclusion of a bath, by

extending the end of hose E outside of chamber F, tank H may be quickly emptied with pump A, or a waste-pipe may be inserted in the bottom of tank H to empty and clean it. Pump A and floors h^1 are removable from tank H by lifting them out for purposes of cleaning and repairing.

The cleansing, health-restoring, and health-preserving peculiarities of my invention will be better understood by the following data of a hot and also of a cold shower-bath by my process: I have found that with the air in chamber F at a temperature of 66° Fahrenheit, two gallons of water at 178° Fahrenheit, placed in tank H and projected in a shower on the walls of chamber F for one minute, fell to 120° Fahrenheit; then showered on the bather for thirty minutes it fell to 75° Fahrenheit, graduated as follows: Beginning at 120° Fahrenheit, the first ten minutes it fell to 95° Fahrenheit; the next five minutes it fell to 86° Fahrenheit; next five minutes it fell to 81° Fahrenheit; next five minutes it fell to 77° Fahrenheit, and the last five minutes it fell to 75° Fahrenheit.

This gradual change of temperatures constitutes an important feature of the use of my process. The temperatures will be slightly varied by differing circumstances—as, for example, a less amount of water would fall in temperature more rapidly, and a greater amount would retain the heat longer. Also, the rapidity with which the water is passed in its circuit, the size of the stream, or the fineness of the shower used would vary the change of temperatures—that is, the slower the water is moved the longer it retains the heat when hot or warm water is used; but when cold or cool water is employed, the slower it is moved the slower it will rise in temperature; also, the greater the amount of cold water used the slower it will rise in temperature, &c.

During the hot shower-bath above described the water passed through hose-sprinkler *e* at an average rate of four gallons per minute, so that the two gallons would be discharged in a shower sixty times in thirty minutes. Hence it would require one hundred and twenty gallons of water to maintain that amount of shower for that length of time if the water went to waste as soon as once used.

In the use of a cold shower-bath by my process, I have observed that, with the air in chamber F at 76° Fahrenheit, one gallon of water at 50° Fahrenheit, placed therein and showered on the bather ten minutes, rose to 70° Fahrenheit, and in ten minutes more it had reached in temperature 75° Fahrenheit.

The size of the apparatus used in the foregoing tests was three feet square by seven feet two inches in height, measured on the outside. Height of space in chamber F above floors h^1 and beam D of pump A is six feet and six inches. This I believe to be a convenient size, though the exact dimension is not an essential feature of my improved bathing apparatus, provided always that it is large enough to contain the bather when operating it. At the same time chamber F should not be so large that a reasonable amount of liquid—say, from one to three gallons—would not be sufficient to maintain therein a continuous shower or stream of the usual quantity for shower or douche baths. The smaller chamber F is so constructed that the faster a cold liquid will rise in temperature while being used, the slower will a hot liquid fall in temperature during a bath.

The size of the apparatus herein given is ample for any ordinary-sized person to bathe in, and four children, aged, respectively, nine, eight, six, and four years, have comfortably bathed in it all at the same time.

The effect of a hot shower-bath, as described, is that the liquid retains a high temperature long enough to fill the chamber F with steam, produce relaxation, open the pores of the skin, and thoroughly cleanse the same. The rapid cooling prevents debilitation, closes the pores, and invigorates the bather. The gradual cooling avoids any injurious shock to the system by the change from heat to cold.

The effect of a cold shower-bath, as described, is that the surface of the body is at first contracted by the cold liquid striking it, the blood is driven inwardly, causing a cold or chilly sensation, which in most cases is followed in a few minutes by a reaction, the blood returns toward the surface with increased quantity and force, producing a comfortably warm sensation. By my process the liquid will rise so rapidly and regularly in temperature that in any ordinary case the reaction and its sensations will not cease during the most protracted bath.

The physical exercise required of the bather in using my bathing apparatus hastens and prolongs the reaction by accelerating the circulation of his blood.

Bathing-liquid of any desired degree of temperature may be used by my process when liquid of a higher temperature than that of the apparatus and air surrounding it is used. It will fall during the bath to within a few degrees of the original temperature of the apparatus and air within it; but, owing to the fact that all the heat contained in the liquid does not escape, but is distributed so as to equalize the temperatures of the liquid, the apparatus and the air within it, also the animal heat from the bather, keeps the temperature of the liquid and air in the apparatus a little above the temperature of the air outside of the apparatus.

When a proper amount, say from one to two gallons, of liquid colder than the apparatus and air within it is used, the liquid will quickly rise to the original temperature of the apparatus and air within it.

Hardly any two persons desire or require a bath of exactly the same temperature. Therefore it is impossible to lay down any general rule in that respect.

The feature of rapid regular rise or fall in temperatures during a bath, as set forth, is

applicable to all cases; and I believe the foregoing is sufficiently full, clear, concise, and exact to enable any person to suit themselves as to temperature of a bath by my process.

Bags made of water-tight fabric or water-tight apartments may be provided in chamber F to hold and keep dry cloths, towels, and toilet-fixtures.

In carrying my process into effect I do not confine myself to the apparatus herein described. Any device capable of producing a continuous shower, stream, or douche bath by repeatedly using the same liquid without addition or loss of liquid, as described, may be used.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination of chamber F, having door F′, window *f*, hook *f′*, and water-tight-bottom tank H, and floors h^1 with pump A, having plungers C′ and chambers a^3, and hose E, with or without hose-sprinkler *e*, arranged and operated substantially as shown and described, and for the purpose specified.

2. The combination of oscillating beam D, plungers C′, valves V and V′, air-chamber *a*, and hose-pipe E, with or without hose-sprinkler *e*, arranged and operating in chamber F, substantially as shown and described, and for the purpose set forth.

3. In a shower-bath apparatus adapted to be operated by the alternate tilting weight of the bather, the combination, with the two end pumps, of the single platform, pivoted in a vertical plane between said pumps, and actuating the same, substantially as described.

WARREN WASSON.

Witnesses:
M. D. HATCH,
H. S. MASON.