

(No Model.)

2 Sheets—Sheet 1.

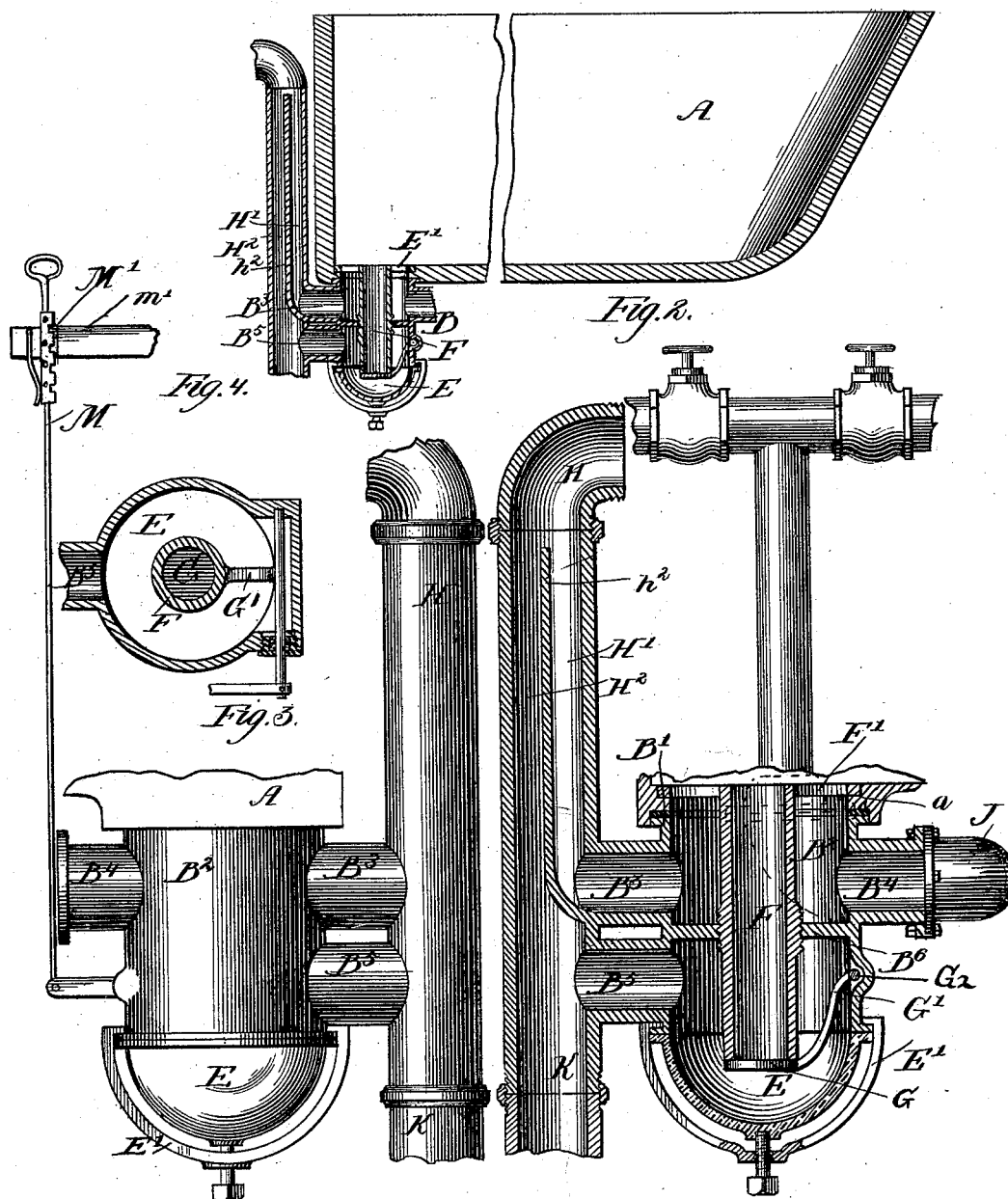
F. A. WELLS.

COMBINED SUPPLY. OVERFLOW, &c., FOR BATH TUBS.

No. 418,776.

Patented Jan. 7, 1890.

Fig. 1.



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Fig. 6

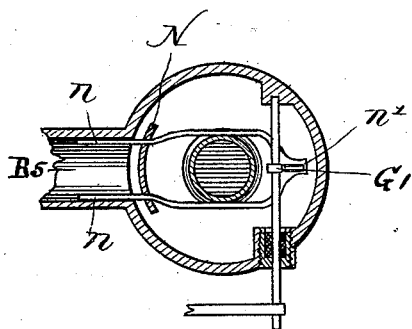


Fig. 5

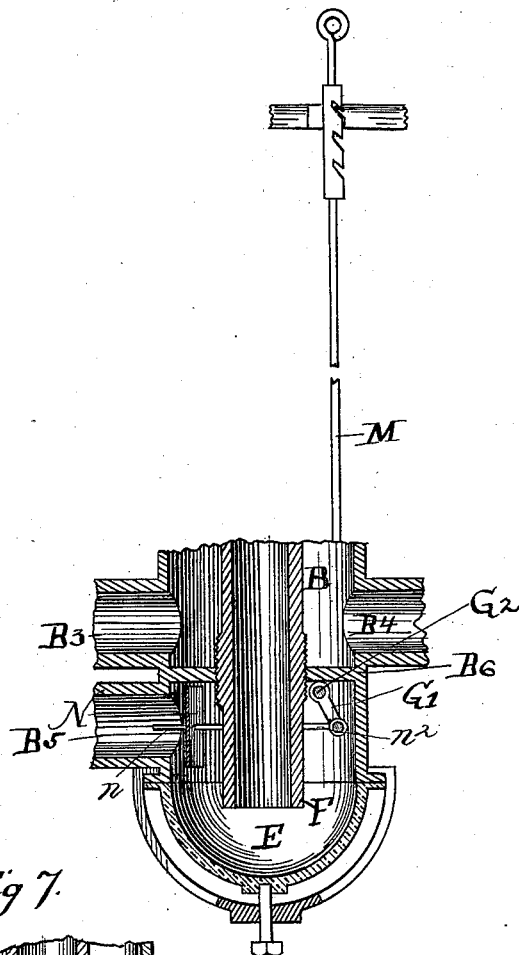


Fig. 8

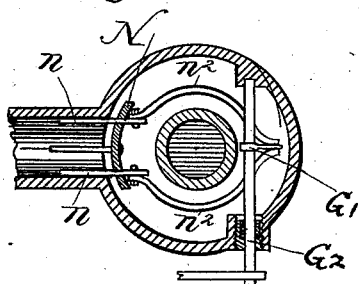
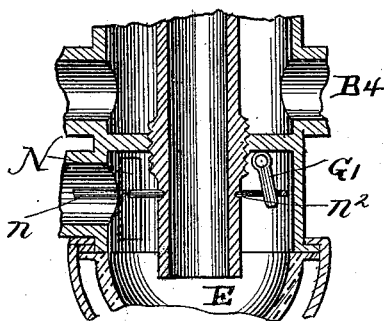


Fig. 7



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UNITED STATES PATENT OFFICE.

FRANK. A. WELLS, OF ALLEGHENY, PENNSYLVANIA.

COMBINED SUPPLY, OVERFLOW, &c., FOR BATH-TUBS.

SPECIFICATION forming part of Letters Patent No. 418,776, dated January 7, 1890.

Application filed November 4, 1887. Renewed June 7, 1889. Serial No. 313,455. (No model.)

To all whom it may concern:

Be it known that I, FRANK. A. WELLS, a citizen of the United States, residing at Allegheny, county of Allegheny, State of Pennsylvania, have invented certain new and useful Improvements in Combined Supply, Overflow, and Waste for Bath-Tubs, which are fully described in the following specification, reference being had to the accompanying drawings, forming a part thereof.

This invention is an improvement upon a similar one for which I have made application for Letters Patent, which was filed in the Patent Office November 26, 1886, Serial No. 219,941.

In the drawings, Figure 1 is a vertical section of a bath-tub and my improved fitting attached. Fig. 2 is a detail vertical section of the entire fitting, with the supply, overflow, and waste-pipes connected thereto. Fig. 3 is an elevation of the entire fitting detached from the tub. Fig. 4 is a cross-section of the chamber B and waste-duct F through the valve rock-shaft G. Fig. 5 is a detail vertical section of the chamber B and connections, showing a modification of my device in respect to the cut-off valve. Fig. 6 is a cross-section of same through the rock-shaft G. Figs. 7 and 8 are, respectively, vertical and cross sections of the chamber B, showing another modification of the same feature.

A is the bath-tub, having a water supply and discharge orifice *a* located at the bottom.

B is a fitting which comprises the flange B' at the top, adapted to bear against the under side of the bath-tub about the water-orifice and make a water-tight junction therewith by means of packing, which may be inserted between the tub and flange. Said fitting comprises, further, the body portion B², the overflow eduction-passage B³, the supply-passage B⁴, and the waste-outlet passage B⁵. Said fitting is open from top to bottom, the top opening into the bath-tub through the water-orifice thereof and the bottom opening into the removable pocket E, which is preferably made of glass and clamped onto the fitting B by suitable coupling, as E', making a water-tight junction by means of packing inserted between the pocket and the lower end of the fitting B.

F is a thimble or sleeve which has at the

upper end the flange F', which is perforated and of sufficient diameter to overlap the water-orifice *a* of the bath-tub and bear upon the margin of said orifice, and at the middle point is exteriorly threaded and screwed into the interior boss B⁶ of the fitting B, and passes entirely through and protrudes downward into the pocket E. The flange F' of this thimble constitutes the strainer, and its longitudinal duct constitutes the induction portion of the waste-passage from the tub. This waste-passage is adapted to be opened and closed by a valve, which closes the mouth of one of the orifices of the lower chamber. The orifice closed may be the mouth of either an induction or eduction pipe.

In Figs. 1, 2, and 4 I show a valve G at the lower end of the duct F, opened by the pull M, attached to the lever-arm G'. When the tub is empty, it is held up against the lower end of the duct by the weight of the pull-rod resting upon it independently of any locking device on the pull M for locking it in such position, and any back-pressure of water seats it firmly, and thereby prevents any foul water rising from the sewer or any gas generated in the trap from entering the tub.

In order to hold the valve against the mouth of the waste-duct when the tub is filled, and also to hold it away from said mouth when the tub is to be emptied, any locking device may be employed, as the notched plate M', secured to the pull-rod and lodged on a projection *m'* on the edge of the tub. Preferably, however, I employ a valve N, seating against the mouth of the outlet-passage B⁵, as shown in Figs. 5 and 6, in form a cylindrical segment, to fit against the walls of the chamber, secured to two guides *n n*, which fit within the outlet-passage B⁵, pass through the valve, and around the duct F in a groove in its outer surface, in which they run, and by which means the valve is kept from sagging or the guides from binding in the passage B⁵. They unite in the stem *n'*, which is provided with a longitudinal aperture through which the free end of the lever-arm G', attached at its other end to the rock-shaft G², passes and operates the valve by the movement of the valve-rod.

A modification of this device is shown in Figs. 7 and 8, in which the guides *n n* are

pivoted on arms $n^2 n^2$, which pass around the duct F and are attached to the rock-shaft G² by the lever-arm G'. Either of these three devices obviates the necessity for a rubber stopper and attendant chain in the tub at the upper end of the duct F. The valve shown in Figs. 5, 6, 7, and 8 will be held shut by the pressure of the water in the tub when it is full, and is opened by the pull M, attached to the rock-shaft, and can be locked open or shut by any suitable device on the pull-rod. A boss B⁶, constituting a horizontal partition or diaphragm, is located between the level of the supply-duct and the overflow eduction-passage on the upper side and the waste outlet-passage on the lower side, so that the thimble F constitutes a seal from the bath-tub past the first-mentioned upper passages to the said lower passage, so that water entering said thimble from above from the tub cannot pass into the overflow eduction-passage or into the supply-passage, but must escape by passing beyond the diaphragm B⁶, and so has access only to the passage which is below said diaphragm. Furthermore, since said thimble terminates in the pocket E, which is below all the passages communicating with the fitting B, there is formed in said pocket a trap which shuts off communication for sewer-gas from the waste-pipe into the bath-tub.

H is the stand-pipe, having two passages H' and H², the former being a continuation of the overflow eduction-passage B³ and the latter emptying directly downward into the waste-pipe K, and thence to the sewer. Said passages H' and H² unite above the partition or wall h^2 , and at the upper end the stand-pipe H terminates open, adapted to be connected to a suitable ventilating-pipe.

To the supply-passage B⁴ is connected the supply-pipe J, and the waste outlet-passage B⁵ is connected to the waste-pipe K, and thence to the sewer.

The operation of this device is as follows: Water being admitted to the supply-pipe enters through the passage B⁴ to the cavity of the fitting B around the thimble F, and rises through the strainer or flange F' into the bath-tub. The valve G closing the direct waste-passage F, the water will rise in the tub, and at the same time passing out through the overflow eduction-passage B³ will rise in the stand-pipe H until the height of the partition-wall is reached in the pipe and tub, and thereafter the water entering through the supply-pipe will flow out over said partition through the passage H² to the sewer. The supply having been cut off and the tub put into use, when it is desired to empty the same, the valves G or N being opened, the water in the tub will pass out through the duct F (which is a direct waste-passage down into the pocket E) and up and out through the waste outlet-passage B⁵. Simultaneously with this outflow through the tub the water from the passage H' of the stand-pipe H will

re-enter through the passage B³ and rise through the strainer F', preventing the accumulation of any filth thereon, which might otherwise be lodged by the outflowing stream through the direct waste-passage of the thimble F, and will thus join the water in the tub and flow out through said direct waste-passage, so that when the tub is finally emptied all passages will be flushed clean, except there should be heavy matter which has passed out from the direct waste-passage in the thimble F and be lodged in the pocket E. Any such matter thus accumulated in the said pocket will be readily discernible, the pocket being of glass, and the coupling E' can be removed, the pocket E detached, and such matter removed. It will be observed that the direct waste-passage from the tub is, as has been stated, through the thimble F, and also that the annular space surrounding the thimble above the boss B⁶ is a part both of the overflow eduction and the supply induction passages; also, that there can be no communication from the overflow or from the supply to the direct waste-passage through the duct F except that which occurs by the flow back and through the strainer F' into the tub, and the result of these relative positions of the several parts is that by no possibility can any water, except that from the overflow-passage, which is always clean water derived directly from the supply, be retained in the fitting in such position that it may enter the tub with supply-water, and, as above pointed out, the strainer through which the supply passes is washed clear, and whenever the tub has emptied will not therefore contain foul matter to contaminate the supply when next thereafter admitted. Considering the trap in the pocket E in its relation to the duct B³ and the descending portion of the waste-pipe, it will be seen that the duct B³, having communication with the air at the upper end of the stand-pipe H, will effectually prevent the possibility of the trap being siphoned out and emptied while the waste-pipe is filled with the outflowing stream. This function is important, because the duct F is thereby rendered certain to be water-sealed at its lower mouth, since the trap will always be kept full of water; also, inasmuch as the passage H² empties directly into the sewer, any back-pressure of gas from the sewer will rise directly through the ventilating-flue with no possibility of forcing past the water in the trap E and entering the room.

I do not herein claim, broadly, the combination or arrangement of the parts by which the supply is admitted through the overflow-passage directly to the bowl in the vicinity of but without passing through any portion of the waste-passage, because I have claimed that matter in my pending application, Serial No. 255,457, originally filed as Serial No. 219,941, dated November 26, 1886, and renewed November 18, 1887.

I claim—

1. In combination with the tub, the fitting B, having two chambers, one above the other, which communicate independently with the tub at the bottom thereof, the supply and overflow ducts communicating with the upper chamber and thence with the tub, the waste-outlet communicating with the lower chamber, and the overflow-passage extending upward above the bottom of the tub and open to atmospheric pressure at its highest point, substantially as and for the purpose set forth.

2. In combination with the tub, the waste-duct leading therefrom, the trap into which said waste-duct discharges, the waste-outlet leading from such trap, a stand-pipe communicating with said waste-outlet and with the bottom of the tub and open to the air at its upper end, and the supply-pipe communicating with the said stand-pipe, whereby said stand-pipe serves as the overflow-pipe from the tub and as a vent for the trap to prevent its siphoning and as a means of ventilation of said trap and to relieve it from back-pressure of sewer-gas, substantially as and for the purpose set forth.

3. In combination with the tub having a single water-orifice *a*, the fitting B, joined to the tub, encircling said orifice and having the pocket E at the lower end, the central waste-duct F, opening above within the orifice *a* and below in the pocket E and making a water-tight junction with the fitting B at a point between its ends, the supply and overflow passages communicating with the fitting above such junction, and the waste-outlet communicating with said fitting below said junction and above the said pocket, substantially as and for the purpose set forth.

4. In combination with the tub, the fitting B, having its upper end joined to the tub and having the detachable cup E joined to its lower end, the interior duct F, open at both ends and making between its ends water-tight junction with the fitting, having above said junction the overflow induction-orifice and below said junction and above the junction of the cup E the waste-eduction orifice, substantially as set forth.

5. In combination with the tub, the fitting B, having upper and lower chambers, the upper communicating with the supply and over-

flow, the duct F, leading through said upper and terminating within said lower chamber and forming the induction-passage thereof and the wast-outflow forming the eduction-passage thereof, and the valve located wholly within said lower chamber and closing over the mouth of one of said passages and having its stem extended through the wall of the said chamber, and suitable external means for operating it at will, substantially as and for the purpose set forth.

6. In combination with the tub, the fitting B, having upper and lower chambers, the upper communicating with the supply and overflow, the duct F, leading through said upper and terminating within said lower chamber, which constitutes a waste-passage, and whose outlet is higher than the end of said duct, and a valve located wholly within said lower chamber and closing over the mouth of the passage B⁵ and having its stem extended through the wall of the said chamber, and suitable external means for operating it at will, substantially as and for the purpose set forth.

7. In combination with the tub, the waste-passage leading therefrom, comprising the duct F, and a cylindrical chamber inclosing the end of said duct having the lateral outlet-passage B⁵, a valve, in form a cylindrical segment, located wholly within said chamber and closing over the mouth of said outlet-passage and having horizontal projections from its convex surface which enter the passage, whereby the valve is guided, substantially as and for the purpose set forth.

8. In combination with the tub, the waste-passage leading therefrom, comprising the duct F, and a cylindrical chamber inclosing the end of said duct, having the lateral outlet-passage B⁵, a valve, in form a cylindrical segment, located wholly within said chamber and closing over the mouth of said outlet-passage and having arms extending from its convex surface around the duct F and connected by a crank-arm to the rock-shaft, whereby the valve is operated, substantially as and for the purpose set forth.

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Witnesses:

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