Nov. 8, 1927. 1,648,126

O. H. HOSMER

VALVE

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Fig. 1.

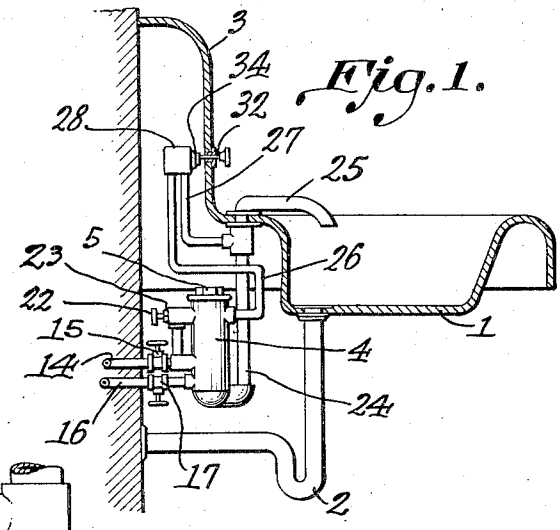


Fig. 2.

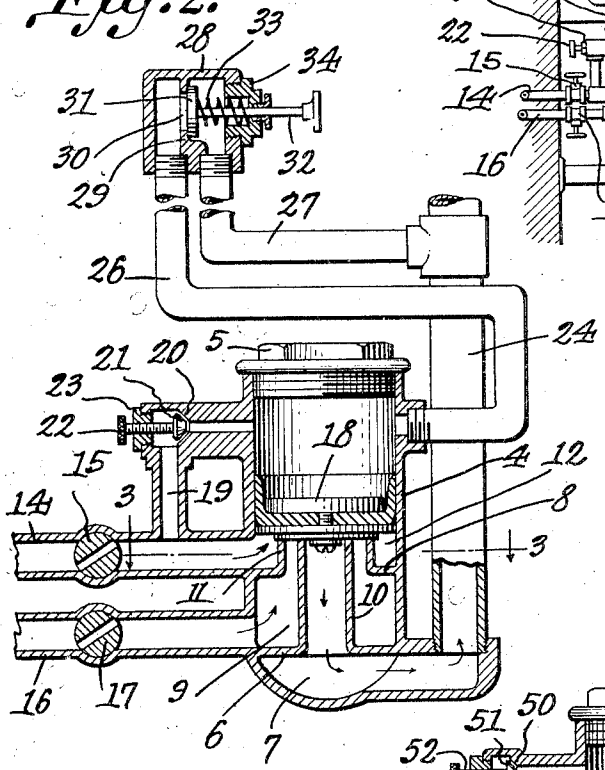


Fig. 4.

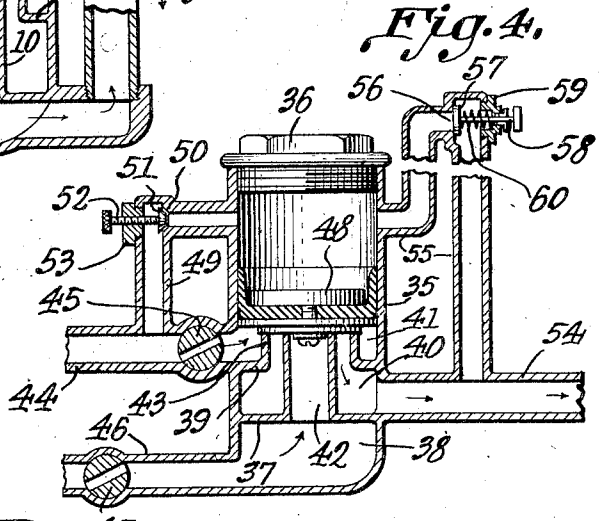
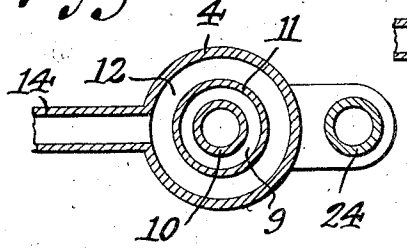


Fig. 3.



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Fig. 5.

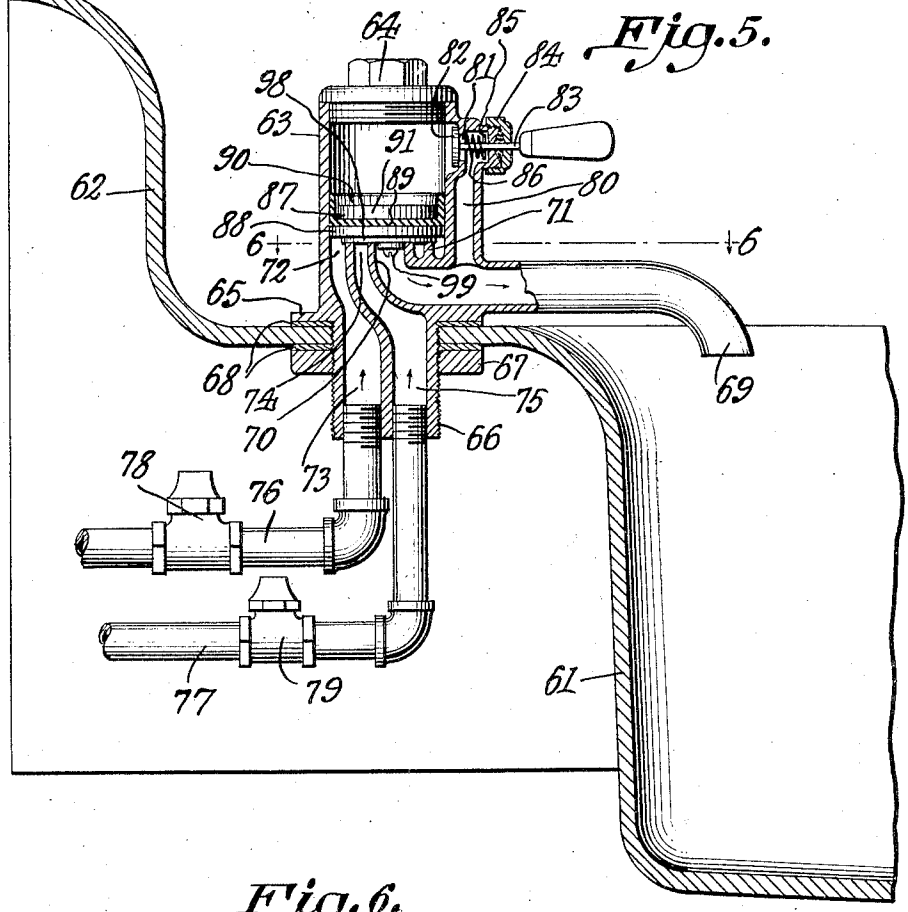


Fig. 6.

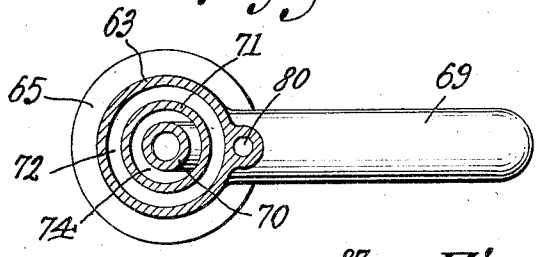
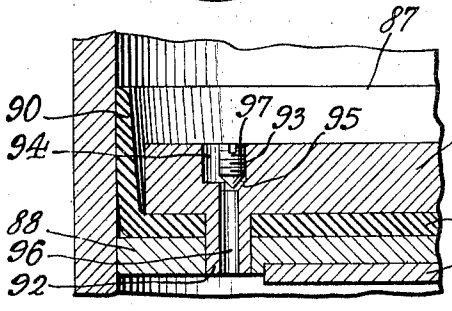


Fig. 7.



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Fig. 8.

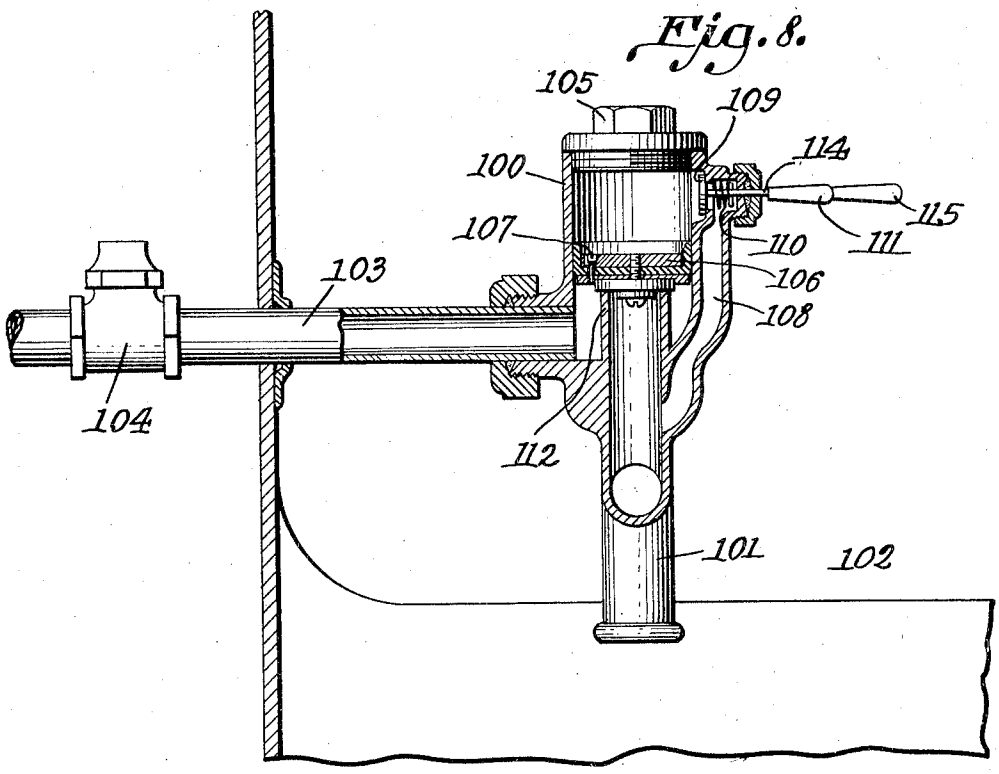
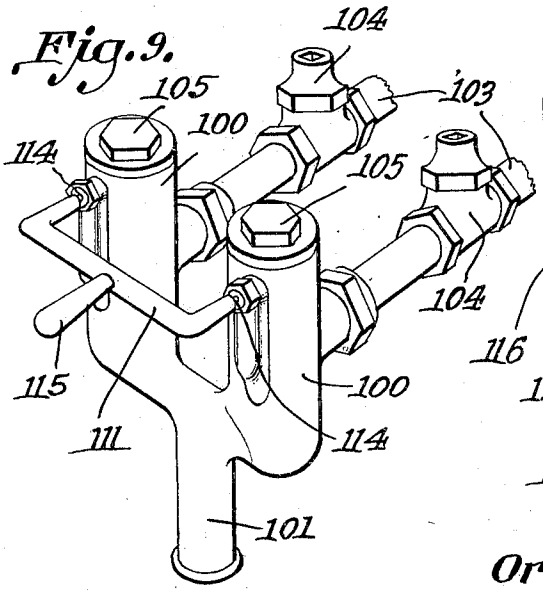


Fig. 9.



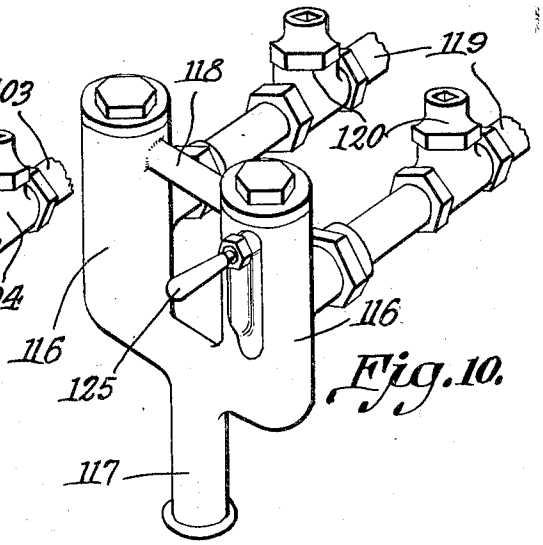


Fig. 10.

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Patented Nov. 8, 1927. 1,648,126

UNITED STATES PATENT OFFICE.

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VALVE.

Application filed March 29, 1926. Serial No. 93,257.

By way of explanation, it may be stated that a person rarely puts the plug in a public washbowl, permits water to collect in the bowl, and washes his hands in the water thus collected. Rather, the custom is to wash the hands in running water, the result being that the hands have to be shifted from hot water to cold water, with uncomfortable consequences. The foregoing being true, this invention aims to provide a novel means whereby a mixture of cold and hot water may be permitted to flow from the spigot for a period of time which may be determined.

It is within the province of the disclosure to improve generally and to enhance the utility of devices of that type to which the invention appertains.

With the above and other objects in view which will appear as the description proceeds, the invention resides in the combination and arrangement of parts and in the details of construction hereinafter described and claimed, it being understood that changes in the precise embodiment of the invention herein disclosed, may be made within the scope of what is claimed, without departing from the spirit of the invention.

In the drawings:—

Figure 1 shows in elevation, a device constructed in accordance with the invention and mounted on a washbowl; Figure 2 is a section of the valve mechanism; Figure 3 is a section on the line 3—3 of Figure 2; Figure 4 is a section showing a modification; Figure 5 is a section showing another modification; Figure 6 is a section on the line 6—6 of Figure 5; Figure 7 is a sectional view disclosing the timing valve; Figure 8 is a section showing another modification; Figure 9 is a perspective view of the structure disclosed in Figure 8; Figure 10 is a perspective view showing another modification.

Referring to Figures 1, 2 and 3, the numeral 1 marks a washbowl. The washbowl 1 has a drain 2. The back of the washbowl is marked by the numeral 3.

In carrying out the invention, there is provided a casing 4. The casing 4 is closed at its upper end by a removable plug 5. The casing 4 has a lower partition 6. The partition 6 forms a lower chamber 7 in the casing 4. The casing 4 has an intermediate partition 8. The intermediate partition 8 forms an intermediate chamber 9 between the partition 8 and the lower partition 6. The lower partition 6 carries an upstanding tubular seat 10. The seat 10 communicates at its lower end with the chamber 7. The partition 8 carries an upstanding tubular seat 11. An upper chamber 12 exists in the casing 4 about the tubular seat 11. A cold water inlet pipe 14 is joined to the casing 4. The cold water inlet pipe 14 communicates with the chamber 12. There is a valve 15 in the cold water pipe 14. The valve 15 is under the control of an operator, to regulate the amount of water that passes through the pipe 14. A hot water pipe 16 is connected to the casing 4. The hot water pipe 16 communicates with the chamber 9. There is a valve 17 in the hot water inlet pipe 16. The valve 17 is under the control of an operator. It regulates the amount of hot water that passes through the pipe 16. By a proper manipulation of the valves 15 and 17, with respect to each other, the temperature of the mixture of hot and cold water may be regulated.

A sliding valve 18 is mounted for reciprocation in the casing 4. When the valve 18 is in its lowermost position, as shown in Figure 2, it closes the seat 10, the chamber 9, and the chamber 12. A by-pass 19 connects the cold water inlet pipe 14 with the casing 4 at a point above the valve 18. There is a seat 20 in the by-pass 19. The seat 20 cooperates with a timing valve of any desired kind. If preferred, the valve 21 may be used, the same being carried by a screw 22 threaded into a plug 23 mounted in the by-pass.

A pipe 24 communicates at its lower end with the chamber 7. The pipe 24 terminates in a faucet 25 discharging into the bowl 1. A pipe 26 communicates with one side of the casing 4, at a point above the valve 18. A pipe 27 is branched off from the pipe 24. The pipes 26 and 27 are joined at their upper ends by a valve casing 28. The pipes 26 and 27 may be alluded to as a U-shaped or loop-shaped pipe in which a valve casing (28) is interposed. The valve casing 28 has a transverse partition 29. The partition 29 is located between the upper ends of the pipes 26 and 27. It has an opening 30. The opening 30 is adapted to be closed by a valve 31. The valve 31 is mounted on a stem 32. The stem 32 slides in a gland 34 carried by the casing 28. The compression spring 33 surrounds a portion of the stem

32. One end of the spring 33 abuts against the gland 34. The other end of the spring 33 abuts against the valve 31. The function of the spring 33 is to maintain the valve 31 seated on the partition 29, to close the opening 30. The stem 32 is accessible through the back 3 of the washbowl 1.

In practical operation, the operator unseats the valve 31 by pulling outwardly on the stem 32 and holding it for a moment. When the stem 32 is released, the spring 33 closes the valve 31 on the opening 30 in the partition 29. While the valve 31 is opened, pressure in the casing 4, above the valve 18 is released. The valve 18 moves upwardly, because there is a full head of water beneath it, derived from the pipes 14 and 16. When the valve 18 moves upwardly, the water in the casing 4, above the valve 18, flows through the pipe 2 into the casing 28, through the opening 30, out by way of the pipe 27, into the pipe 24, and away by means of the faucet 25. When the valve 18 moves upwardly, cold water flows from the pipe 14, and hot water flows from the pipe 16, the hot and cold water mingling in the casing 4, below the valve 18, the mixture of water passing downwardly through the seat 10, into the chamber 7, and through the pipe 24 to the spigot 25, a mixture of hot and cold water thus being delivered to the operator by a simple movement which consists in pulling valve stem 32 outwardly. As hereinbefore pointed out, the proportion of hot water and cold water may be changed by shifting one or both of the valves 15 and 17, and these valves, furthermore, govern the amount of water that is supplied. The length of time that the water is to flow, is regulated by the position of the adjustable valve 21 with respect to the seat 20. The water flows from the pipe 14 through the by-pass 19 into the casing 4, about the valve 18, and the valve thus is caused to seat, after an interval, the length of which is regulated by the position of the valve 21.

Referring to Figure 4, there is shown a casing 35. The upper end of the casing 35 is stopped by a closure plug 36. The casing 35 has a lower partition 37. There is a lower chamber 38 in the casing 35, below the partition 37. The casing 35 has an intermediate partition 39. There is an intermediate chamber 40 between the partitions 39 and 37. There is an upper chamber 41 above the intermediate partition 39. The lower partition 37 carries an upstanding tubular seat 42 extended through the chamber 40. The intermediate partition 39 has an upstanding tubular seat 43 disposed about the seat 42 and extended upwardly through the chamber 41.

A cold water inlet pipe 44 is joined to the casing 35. The cold water inlet pipe 44 communicates with the upper chamber 41. There is a valve 45 of any desired kind in the pipe 44. The valve 45 is under the control of an operator. A hot water pipe 46 is joined to the casing 35. The hot water pipe 46 communicates with the lower chamber 38. A valve 47 is interposed in the pipe 46. The valve 47 is under the control of an operator.

A valve 48 is mounted to slide in the casing 35. When the valve is in the lowest position shown in Figure 4, the valve closes the seat 42, the intermediate chamber 40, and the upper chamber 41. A by-pass 49 connects the cold water inlet pipe 44 with the casing 35, at a point above the valve 48. The by-pass 49 has a seat 50. The seat 50 is controlled by a valve 51, of any desired kind. The valve 51 may be mounted on a screw 52 threaded into a plug 53 carried by the by-pass.

An outlet pipe 54 communicates with the intermediate chamber 40. The numeral 55 designates a loop-shaped pipe. One end of the pipe 55 communicates with the outlet member 54. The other end of the pipe 55 communicates with the casing 35 at a point above the valve 48. The pipe 55 is supplied intermediate its ends with a seat 56. A valve 57 cooperates with the seat 56. The valve 57 is mounted on a stem 58. The stem 58 slides in a gland 59 carried by the pipe 55. The numeral 60 designates a compression spring located about the stem 58. One end of the spring 60 abuts against the gland 59. The other end of the spring 60 abuts against the valve 57. The function of the spring 60 is to maintain the valve 57 closed with respect to the seat 56.

In practical operation, the valve 57 is moved to open position by pulling outwardly on the stem 58 and, after a short interval, the operator releases the stem 58, whereupon the spring 60 closes the valve 57 with respect to the seat 56. While the valve 57 is in an open position, the pressure in the casing 35, above the valve 48, is relieved, water above the valve 48 flowing away through the pipe 55 and the pipe 54. The valve 48 rises and displaces the water above it, because a full head of water is delivered against the valve 48, on the underside thereof, from the pipes 44 and 46. When the valve 48 is raised, the chamber 41 and the chamber 40 are opened, as well as the tubular seat 42. Cold water flows from the pipe 44 into the chamber 41, and thence into the casing 35, below the valve 48, which has been elevated. Hot water flows from the pipe 46 into the chamber 38, and through the seat 42, into the casing 35, below the valve 48, which has been elevated. Hot and cold water become mixed and flow downwardly into the chamber 40, the mixture leaving by way of the pipe 54 and passing to the point of use. When the pressure builds up in the casing 35, above

the valve 48, the valve 48 closes to the position shown in Figure 4, and cuts off the supply of hot and cold water. The pressure builds up in the casing 35, above the valve 48, through the by-pass 49, under the governance of the valve 51, it being possible to adjust the position of the valve 51 with respect to the seat 50, by means of the screw 52, the length of time that the mixture of water flows, being governed by the position of the valve 51 with respect to the seat 50. The relative proportions of hot and cold water, and the total amount of water delivered, may be adjusted by regulating the positions of the valves 45 and 47.

Referring to Figures 5, 6 and 7, the numeral 61 marks a bowl carried by a back 62. The numeral 63 marks a tubular casing. The upper end of the casing 63 is stopped by a movable closure plug 64. Near to its lower end, the casing 63 has an outstanding flange 65. The casing 63 is supplied with a reduced neck 66. The neck 66 extends downwardly through the lip of the washbowl 61. A nut 67 is threaded on the neck 66. Packing washers 68 are interposed between the neck 66 and the lip of the washbowl, and between the lip of the washbowl and the flange 65. The casing 63 carries an outstanding spigot 69 which discharges into the bowl 61, the spigot being prolonged backwardly into the casing 63 and terminating in an upstanding tubular seat 70. A seat 71 is disposed above the seat 70. The space between the seat 71 and the wall of the casing 63, communicates, as indicated at 72, with a bore 73 in the neck 66. The space between the upstanding tubular seat 71 and the upstanding tubular seat 70 communicates, as shown at 74, with a bore 75 in the neck 66. A cold water inlet pipe 76 communicates with the bore 73. The hot water inlet pipe 77 communicates with the bore 75. A valve 78, under the control of an operator, is interposed in the pipe 76. A similar valve 79 is interposed in the pipe 77. A casing 63 is provided with a vertical passage 80, communicating at its lower end with the spigot 69. At the upper end of the passage 80 there is an opening 81 which establishes communication between the passage 80 and the upper portion of the casing 63. The opening 81 is under the control of a valve 82. The valve 82 is carried by a stem 83. The stem 83 slides in a gland 84 assembled with the casing 63. There is an abutment 85 on the stem 83. A compression spring 86 is disposed about the stem 83. One end of the spring 86 engages the abutment 85. The other end of the spring 86 engages the casing 63 at a point adjacent to the opening 81. The function of the spring 86 is to hold the valve 82 closed with respect to the opening 81.

A valve 87 is mounted for reciprocation in the casing 63. The valve 87 includes a body 88, preferably in the form of a disk. On the body 88 is located a washer 89 made of any suitable flexible material and having an upstanding marginal rim 90 which engages the inner surface of the casing 63. A washer 89 is held on the body 88 by a head 91, which may be in the form of a metal disk, the head 91 having a tubular neck 92 extended through the washer 89 and through the body 88. In the upper surface of the head 91, there is a bore 93 having a lateral extension 94, there being a seat 95 at the lower end of the bore 93, the seat 95 communicating with the bore 96 of the neck 92. A valve 97, preferably in the form of a screw, is threaded into the bore 93 and may be adjusted, at the will of an operator, toward and away from the seat 95. A packing disk 98 is secured to the lower surface of the body 88 by means of a screw 99 or its equivalent. When the valve 87 is in the lowest position of Figure 5, the disk 98, cooperating with the tubular seats 71 and 70, closes the spigot 69, and closes, also, the point of communication 74, through which the hot water from the pipe 77 is discharged, the body portion 88 of the valve 87 closing off the cold water communication at 72.

In practical operation, the valve 82 is thrust inwardly by means of the stem 83, the spring 86 being compressed. The spring 86 serves to close the valve 82 as soon as the stem 83 is released, but whilst the stem is under pressure at the hand of an operator, and whilst the valve 82 is open, the water in the casing 63, above the valve 87, flows through the opening 81, and through the passage 80, the water being discharged through the spigot 69, and the pressure above the valve 87 being relieved. The valve 87 then moves upwardly, because it has full water pressure beneath, derived from the pipes 76 and 77. When the valve 87 moves to open position, cold water flows upwardly through the pipe 76, and hot water flows upwardly through the pipe 77, the hot and cold water mixing in the casing 63, below the elevated valve 87, the mixture of hot water flowing outwardly through the spigot 69. After an interval of time, regulated and covered by the position of the valve 97 with respect to the seat 95, water flows into the casing 63, above the valve 87, and the valve 87 moves downwardly into the position shown in Figure 5, to cut off the supply of hot and cold water. The relative amounts of hot and cold water, and the total amount of water delivered, are regulated by adjusting one or both of the valves 78 and 79.

Referring to Figures 8 and 9, there is shown casings 100, provided at their upper ends with removable closures 105, the casings communicating at their lower ends with a common spigot 101, adapted to discharge

into a bowl 102. A pipe 103 communicates with each of the casings 100, and in each pipe 103 there is a valve 104 under the control of an operator. The sliding valve appears at 106 and carries a time valve 107. A passage 108 leads from the upper portion of each casing 105 to the lower portion thereof. The valve 106 cooperates with a tubular seat 112. A valve which controls the flow of water from the upper part of the casing 100 through the passage 108, is marked by the numeral 109 and is carried by a stem 114, the closing springs being marked by the numeral 110. The stems 114 are joined to the yoke 111 provided with a handle 115.

The operation of the device will be understood readily from what has been stated hereinbefore in connection with the other forms of the invention. By pushing the yoke 111 inwardly, a mixture of hot and cold water is caused to flow through the spigot 101 until the valve 106 closes, as hereinbefore described, the timing valve 107 being of the kind delineated in Figure 7, and operating as set forth in that figure.

In Figure 10, the casings are shown at 116 and communicate with a spigot 117, as in Figure 9. The casings 116 are joined at their upper ends by a connection 118 located above the valves, which are constructed as shown at 106 in Figure 8. Water inlet pipes appear at 119 and carry the regulating valve 120. A single push valve, indicated generally at 125, replaces the two valves shown at 109 in Figure 8.

What is claimed is:—

1. A device for distributing a mixture of hot and cold water for a definite period having in combination, a valve chamber, a hot water passage communicating with said chamber and with a hot water supply under pressure, a cold water passage communicating with said chamber and with a cold water supply under pressure, an outlet passage for a mixture of hot and cold water, a valve in said casing for simultaneously closing all of said passages, a discharge conduit leading from said chamber at the opposite side of said valve from said passages, a spout with which said discharge conduit and said outlet passage communicate and means adjacent said spout for opening said discharge conduit to the atmosphere and relieving the pressure at the side of said valve opposite said passages and a regulatable bypass conduit connecting one of said first mentioned passages to the side of said valve opposite said passages.

2. A device for dispensing a mixture of hot and cold water for a certain definite period having in combination, a regulatable hot water supply conduit, a regulatable cold water supply conduit, a dispensing spout, a member adjacent said spout adapted to be operated manually and momentarily for actuating the device for discharging water and controlling means actuated by said last mentioned member permitting the flow of a mixture of hot and cold water, issuing simultaneously respectively from said conduits, to said spout, and automatic means for terminating said flow and closing each of said conduits after a certain definite period whereby a discharge of a predetermined mixture of hot and cold water is delivered by one manipulation of said member.

3. A device for dispensing a mixture of hot and cold water for a certain period having in combination, a hot water supply conduit, a regulating valve in said conduit, a cold water supply conduit, a regulating valve in said conduit, a dispensing spout, a mixing chamber with which said conduits communicate, an outlet conduit leading from said mixing chamber to said spout, a valve in said mixing chamber normally closing said supply conduits but adapted to be opened to permit water to flow from said supply conduits to said mixing chamber and outlet conduit, and a manually operable means adjacent said spout for causing movement of said valve to permit hot and cold water to be dispensed at said spout and means for variably controlling the length of time said water will flow.

4. A device for dispensing a mixture of hot and cold water for a certain period having in combination, a hot water supply conduit, a regulating valve in said conduit, a cold water supply conduit, a regulating valve in said conduit, a dispensing spout, a control means for permitting the flow of hot and cold water, a dispensing conduit for conveying a mixture of hot and cold water from said control means to said spout, a manually operable means adjacent said spout adapted to be operated momentarily to permit operation of said control means whereby a regulated mixture of hot and cold water is dispensed at said spout and means for variably regulating the length of time said mixture will be dispensed.

5. A device for dispensing a mixture of hot and cold water having in combination, a hot water supply conduit, a cold water supply conduit, a dispensing spout, a member adjacent said spout adapted to be operated manually and momentarily for actuating said device, automatic means for returning said member to normal position, controlling means actuated by said last mentioned member permitting the flow of a mixture of hot and cold water issuing simultaneously from both of said conduits to said spout, and automatic means for terminating said flow and closing both of said conduits.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature.

ORVILLE H. HOSMER.