W. J. BERGENS.

MIXING VALVE.

APPLICATION FILED AUG. 20, 1917.

1,293,003.

Patented Feb. 4, 1919.

2 SHEETS—SHEET 1.

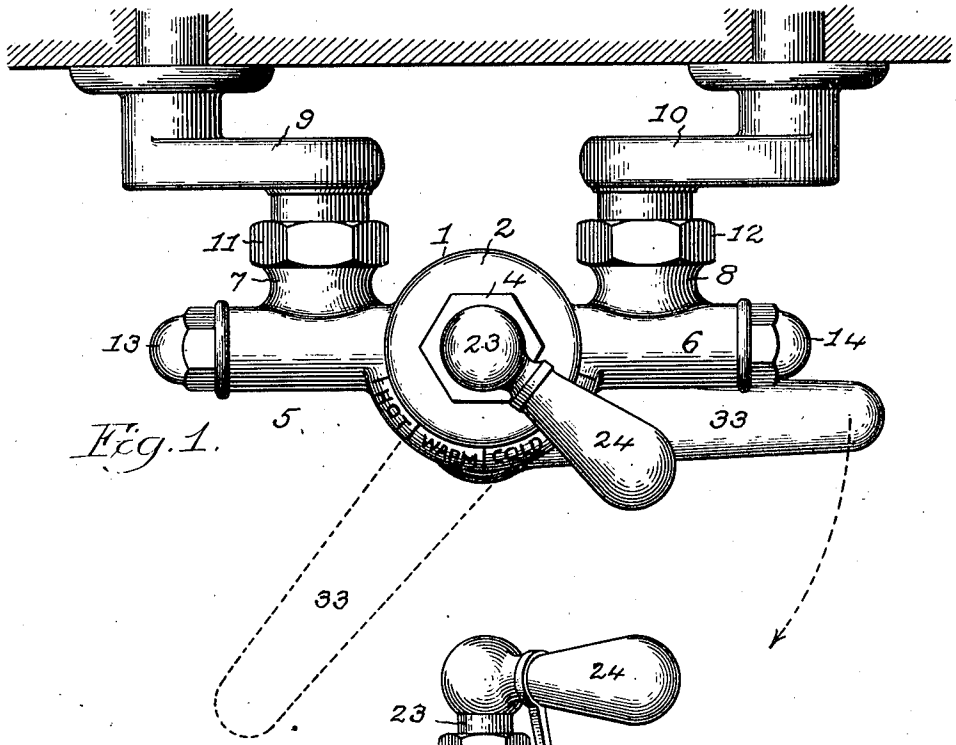


Fig. 1.

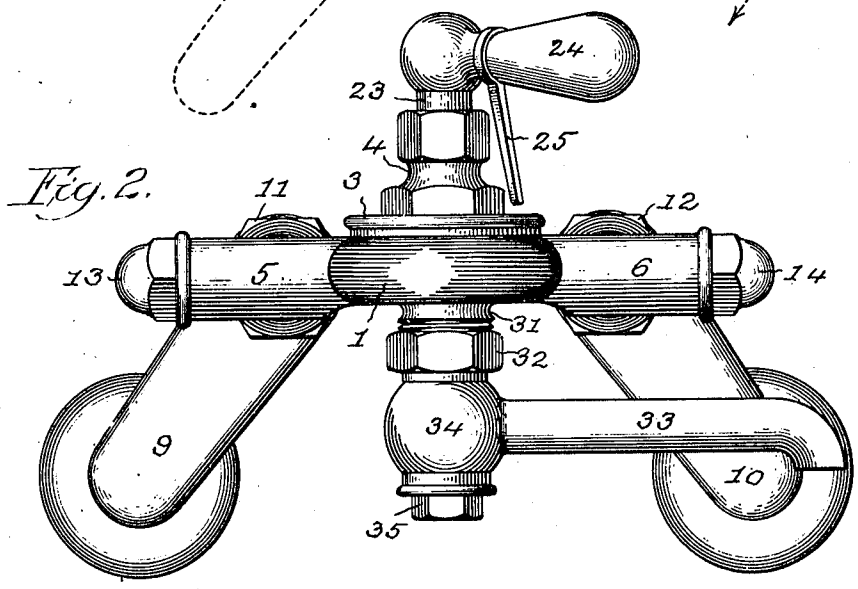


Fig. 2.

Witness:
John Enders

Inventor:
William J. Bergens,
by Robert Burns
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2 SHEETS—SHEET 2.

Fig. 3.

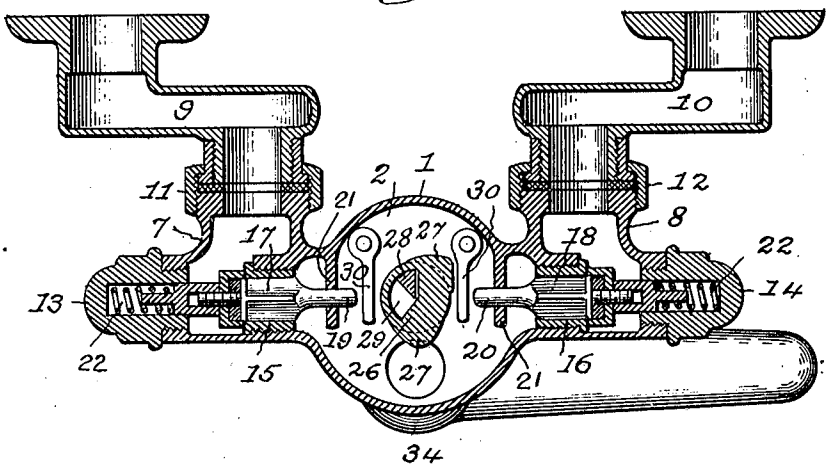
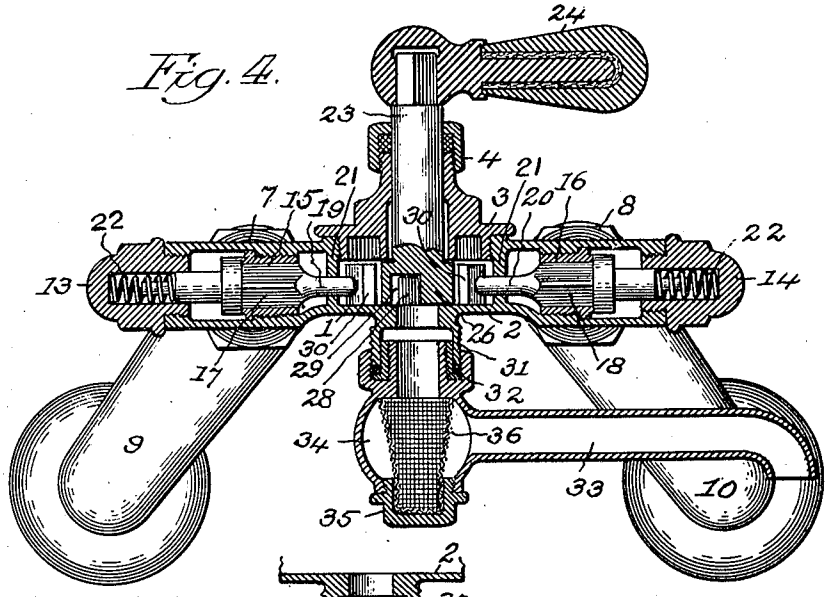


Fig. 4.



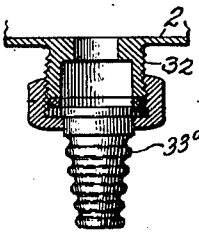


Fig. 5.

Witness:
John Enders

Inventor:
William J. Bergens,
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UNITED STATES PATENT OFFICE.

WILLIAM J. BERGENS, OF MUSKEGON, MICHIGAN, ASSIGNOR TO UNIVERSAL FAUCET COMPANY, OF MUSKEGON, MICHIGAN, A CORPORATION OF MICHIGAN.

MIXING-VALVE.

1,293,003. Specification of Letters Patent. Patented Feb. 4, 1919.

Application filed August 20, 1917. Serial No. 187,300.

To all whom it may concern:

Be it known that I, WILLIAM J. BERGENS, a citizen of the United States of America, and a resident of Muskegon, in the county of Muskegon, State of Michigan, have invented certain new and useful Improvements in Mixing-Valves, of which the following is a specification.

This invention relates to that class of multiple valves adapted for convenient manipulation by a single operating means to deliver water of any required temperature for lavatory and like uses, and the present improvement has for its object:—

To provide a compact, durable and efficient structural formation and association of parts, whereby the user is enabled to obtain a flow of water of the desired temperature in a ready and certain manner and with which the inflowing streams of hot and cold water are effectively mixed in a thorough manner, as will hereinafter more fully appear.

In the accompanying drawings:

Figure 1, is a plan view of the present valve.

Fig. 2, is an elevation of the same.

Fig. 3, is a horizontal section.

Fig. 4, is a vertical section.

Fig. 5, is a detail section of a modification.

Like reference numerals indicate like parts in the several views.

Referring to the drawings, 1 designates the central and main casing of the valve, preferably of a circular shape, and having an approximately flat and integrally formed bottom web or wall 2 and a removable top wall or cap 3 provided with a packing gland 4 which receives the centrally arranged operating spindle or stem of the valve mechanism.

5 and 6 designate counterpart radially disposed T shape valve casings arranged at opposite sides of the main casing 1, and preferably in axial alinement with each other as shown. Said valve casings 5, 6 are preferably formed integral with the main casing 1, with the lateral branches 7, 8 of the respective valve casings 5, 6 adapted for individual connection to the respective hot and cold water trunks 9 and 10 by union couplings 11 and 12. Said trunks 11, 12 are preferably of the ordinary offset form shown.

13 and 14 designate closure caps fitting the outer ends of the respective valve casings 5, 6, and permitting ready access to the valve mechanisms contained in said casings for repair and replacement.

15 and 16 designate removable screw bushings fitting annular ledges or partitions inside the casings 5, 6, and constituting the valve seats thereof.

17 and 18 designate the movable valve members of the structure, of any usual detail construction and having guide stems 19, 20 moving in the central bores of the bushings 15, 16 with their free ends extending into the chamber of the main casing 1 for operation by the mechanism hereinafter described. 21, 21 designate partitions arranged in transverse relation to the axis of the valve members 17, 18, and formed with guide orifices for movement of the inner guide stems 19, 20, of said valves. In the present improvement the partitions 21, 21 constitute lateral extensions of the vertical wall of the central chamber of the main valve casing 1, and at the ends remote from the outlet neck 31 hereinafter described, said partitions are integrally connected to the wall of the casing 1, while at the ends next adjacent to said outlet neck, said partitions are spaced from the wall of the casing to provide narrow vertical passages through which the passing waters are directed in a curved path toward each other to commingle and attain a uniform mixture before reaching the outlet neck

22, 22 designate springs arranged in recesses in the closure caps 13, 14, and having bearing against the valve members 17, 18 to yieldingly maintain the same in a closed condition, in the absence of fluid pressure which in present construction normally tends to close said valve members.

23 designates the central operating spindle or stem heretofore referred to as passing through the packing gland 4, and extending into the closed chamber of the main casing 1 aforesaid. At its upper or outer end, the spindle 23 is provided with an operating handle 24 and an associated pointer 25, for indicating on a curved scale on the upper surface of the main casing 1, the position to which the handle 24 is to be moved to obtain a flow of water of the desired temperature, as usual in the present class of valves.

26 designates a hub secured to the lower end of the operating spindle 23, within the

chamber of the main casing 1, and provided with a pair of cam lugs 27 on its periphery. Said cam lugs 27 are irregularly spaced around the circumference of the hub 26, as shown in Fig. 3, so that either cam lug may operate its particular valve member in an independent manner to effect a discharge of either hot water or of cold water in accordance with the particular turning adjustment of the hub 26, and so that with a further turning adjustment, effect a mixed discharge of hot and cold water.

28 designates a fixed stop lug in the interior of the main casing 1, adapted for engagement in a sector shaped recess 29 in the hub 26 aforesaid, and adapted to limit the turning adjustment of said hub in either direction.

30 designates a pair of intermediate arms or levers pivoted at one end in the interior of the main casing 1 and individual to the respective valve stems 19, 20, and disposed between a valve stem and its associated cam lug with said cam lug bearing against one side of the arm or lever and with the valve stem bearing against the opposite side of the arm or lever, as illustrated in Fig. 3.

31 designates a tubular neck on the bottom wall 2 of the main casing 1 to constitute the outlet passage thereof, and in the preferred construction shown, said neck is externally screw-threaded for the reception of a union coupling 32 by which a suitable outlet nozzle 33 is secured to said tubular neck. The outlet nozzle is preferably of the horizontally adjustable type shown, and is formed with an enlarged chamber 34 at the intersection of its vertical and horizontal passages.

35 designates a hollow cap nut closing an opening in the underside of the aforesaid chamber 34 and adapted to receive and hold the lower end of a conical strainer now to be described.

36 designates a strainer of wire gauze or the like, and preferably of the inverted cone form shown, with its lower and smaller end engaging in the cavity of the cap nut 35, to be held in proper position by such engagement of the parts.

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

1. In a mixing valve, the combination of a main casing having a central circular mixing chamber, an eccentrically arranged bottom outlet housing and a pair of alined inlet housings separated from the central chamber by a pair of deflecting partitions which extend from portions of the circular wall of the mixing chamber to spaced relation to opposed portions of said circular wall to provide tangential passages next to said wall, and a pair of longitudinally alined valves arranged in said inlet housings, and means for operating said valves, substantially as set forth.

2. In a mixing valve, the combination of a main casing having a central circular mixing chamber, an eccentrically arranged bottom outlet housing and a pair of alined inlet housings separated from the central chamber by a pair of deflecting partitions which extend from portions of the circular wall of the mixing chamber to spaced relation to opposed portions of said circular wall to provide tangential passages next to said wall, and a pair of longitudinally alined valves arranged in said inlet housings, and having guide stems at their inner ends moving in guide orifices in the aforesaid partitions, and means for operating said valves, substantially as set forth.

Signed at Chicago, Illinois, this 15th day of August, 1917.

WILLIAM J. BERGENS.