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MIXING FAUCET

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Fig. 1

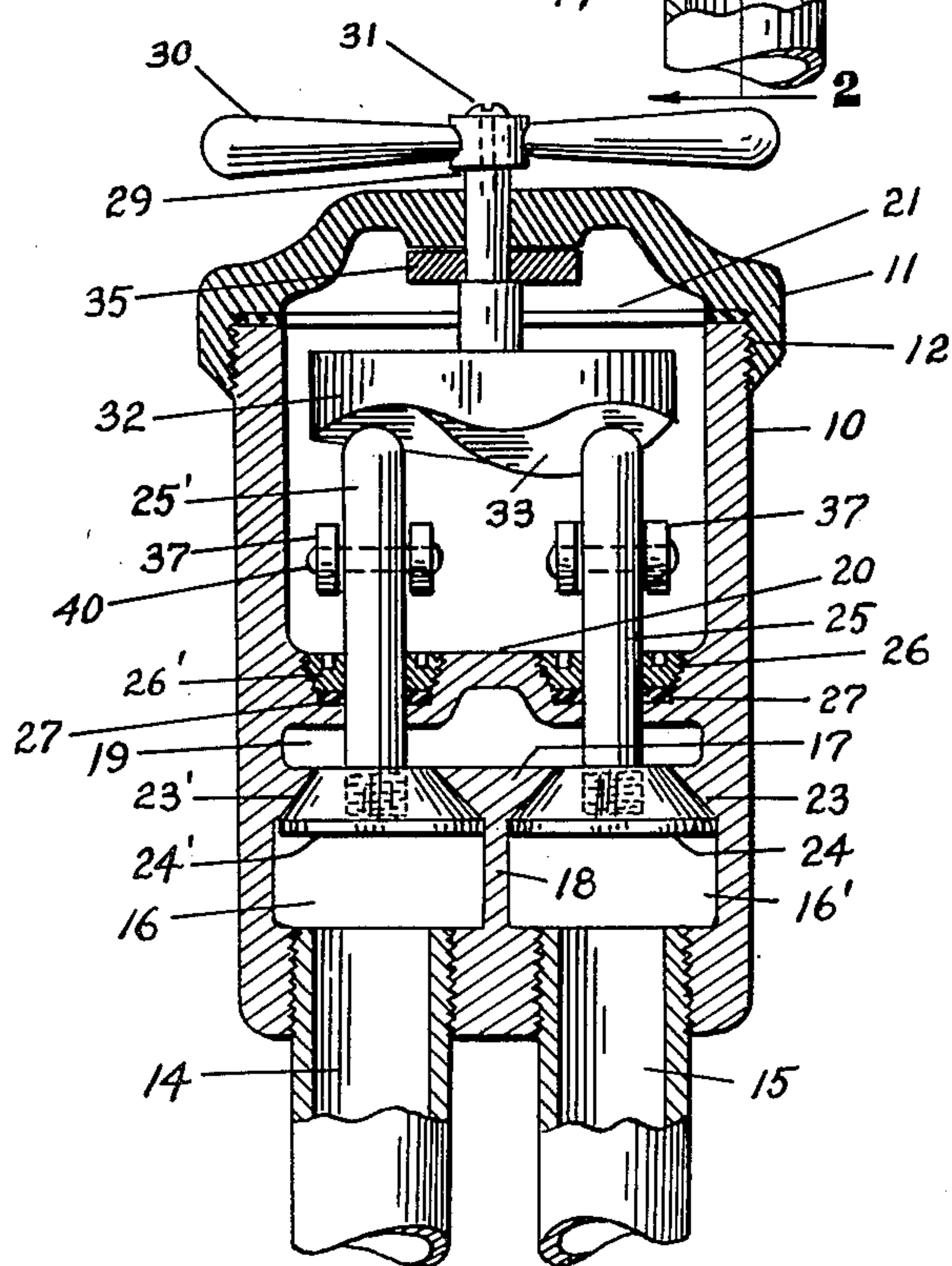
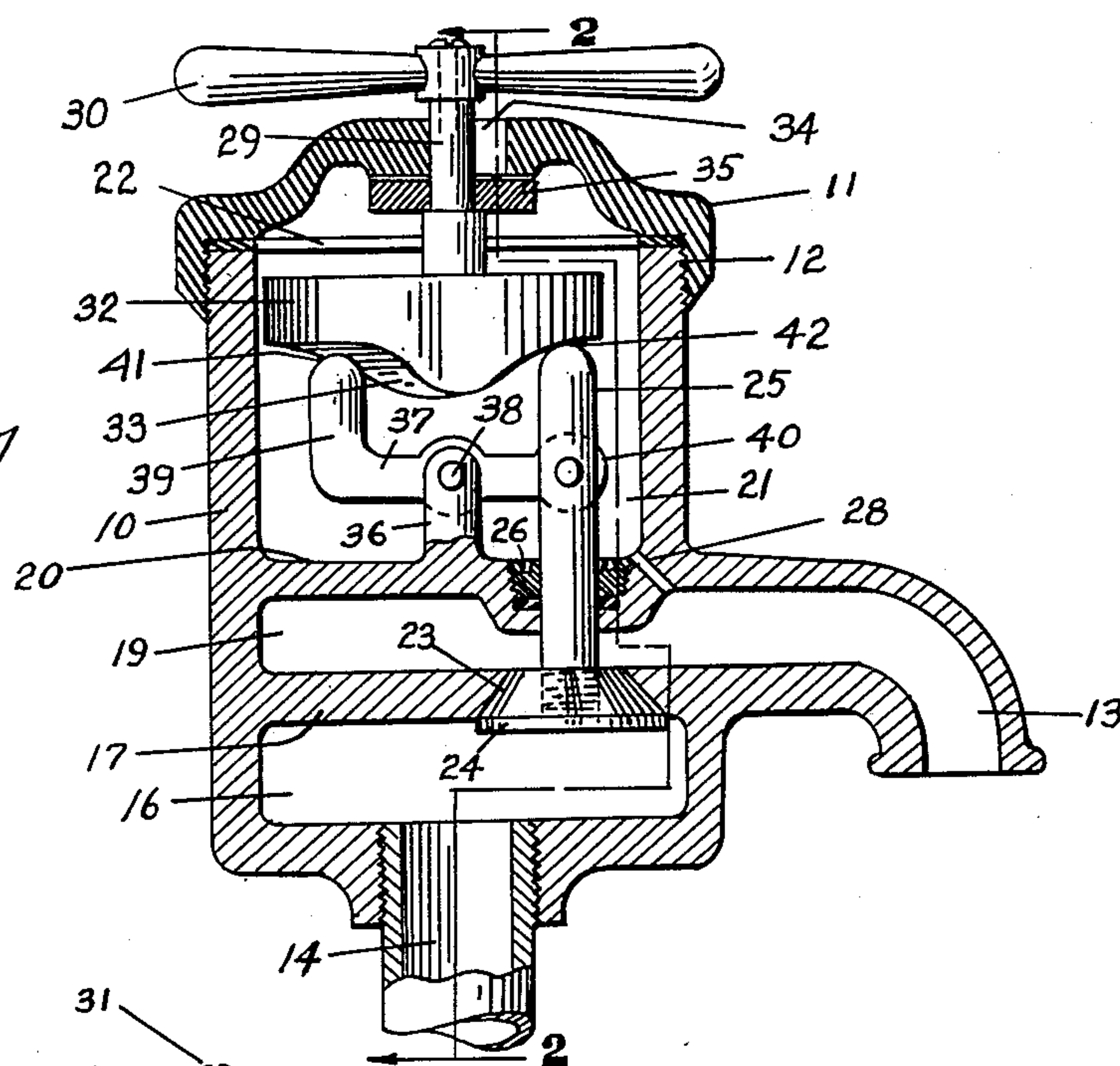


Fig. 2

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MIXING FAUCET

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2 Claims. (Cl. 277—20)

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My invention relates to mixing faucets, and more particularly to a faucet that may be employed as a valve for controlling a fluid of two types or temperatures.

The object of my invention is to provide a device that may be equipped with a single spigot or a plurality of outlets for distributing the mixed liquid.

Another object of my invention is to provide a device that does not rely on a resilient member for control, but rather a cam having a face of irregular contour frictionally contacting a plurality of valve stems, thereby controlling the inlet and outlet valves supplying the liquid to be mixed.

Still another object of my invention is to slidably mount the irregular cam for a horizontal movement, thereby changing the contour of the engaging face of the cam to permit full opening of the valves. It is apparent to anyone familiar with the construction of mixing faucets, that the products constituting the prior art open and close a pair of valves one at a time against a spring pressure, and necessitates the action of both valves in synchronized fashion, closing one valve when the other is open in the proper proportion. It is my intention to provide a device in which the inlets of the various liquids supplied are operated independently of one another, and by shifting the irregular cam to provide a means of supply of a maximum amount of liquid through each inlet.

Other and further objects of my invention will become more apparent as the description proceeds when taken in conjunction with the drawings, in which,

Figure 1 is a fragmentary cross sectional view of the device illustrating the manner in which the valve stems are pivotally controlled by frictional contact against the face of the annular cam, and

Figure 2 is a fragmentary cross sectional view of the device as shown in Figure 1, illustrating the double valve arrangement, and taken at the line 2—2 of Figure 1.

Similar characters of reference indicate corresponding parts throughout the several views, and referring now to the same, the character 10 shows a valve body provided with a cap 11 threadedly engaging the body 10 at 12. The body 10 is shown provided with a single spigot 13 leading from the side wall thereof, but it is obvious that a plurality of outwardly extending outlets may lead from the side of the body at the point where the mixing chamber is located. There are two inlet tubes 14 and 15, respectively shown thread-

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edly engaging the lower portion of the body 10. These tubes are employed for conveying hot and cold or any other liquid to the inside of the body 10. There are four chambers shown, the lower section of the body is partitioned off into chambers 16 and 16' by means of the horizontal partitions 17; and by the vertical partition 18, the mixing chamber 19 is intermediately disposed between the two horizontal partitions 17 and 20, and has the spout 13 shown as its outlet. The operating chamber 21 is located above the partition 20 and closed at its upper end by the cap 11. A packing 22, in the form of a washer, is provided for sealing the cap 11 with the body 10 at the threaded engagement 12.

The partition 17 is provided with two ground seats 23 and 23', forming an annular periphery for the apertures or passages extending through the partition 17 to accommodate the valves 24 and 24' respectively, which are threadedly attached to the valve stems 25 and 25', extending vertically through stuffing nuts 26 and 26' which threadedly engage the partition 20 and encase the sealing material 27 between the nuts 26 and 26' and the partition 20 to form a water tight seal around the stems 25 and 25'.

There is a bleed port 28 through the partition 20 for providing a drain from the chamber 21 to the spout 13.

A vertical stem 29, having a conventional type of handle 30 attached thereto by means of a screw 31, extends downward through the cap 11 and supports a radially formed cam 32 having a face 33 of irregular contour. The cap 11 is provided with an elongated slotted aperture 34 through which the stem 29 passes, and a washer member 35, of a diameter greater than the length of the slotted aperture 34, slidably engages the face of the cap 11 and furnishes a seal for the elongated aperture 34.

The upper face of the partition 20 has a pair of vertically disposed bearings 36 on which link members 37 are pivotally attached at 38. The link members 37 have vertical portions 39 extending upward at one end and are pivotally connected to the valve stems 25 and 25' respectively at the other end 40. The extreme upper ends 41 of the vertical portion 39 and the upper end 42 of the valve stems 25 and 25' engage the irregular surface 33 of the cam 32 at all times. The irregular contour of the surface 33 being so arranged as to allow frictional contacting at all four points at all times. Obviously when the end 41 is at a high point, the end 42 must be at a low point on the surface of the cam 32, thereby caus-

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ing the valve to open when the end 41 is at a low point on the cam 32.

It is manifest to anyone familiar with the art that a device as specified and described may be constructed as a mixing faucet or may be employed as a mixing valve for a plurality of service openings.

In operation, the device functions as follows:

As the handle 30 is rotated, it rotates the vertical stem 29, thereby rotating the cam 32. As the cam 32 rotates, the irregular surface 33 will affect the pivoted action of the link 37 by means of the frictional contact at 41 of the vertical portion 39 and the action of the valve stems 25 and 25' by their contact at 42 with the face 33 of the cam 32. This will cause the actuation of the valves 24 and 24', permitting one or the other or both, to open or close independently of one another, permitting liquid flowing into the tubes 14 and 15 to enter the mixing chamber 19 in the proportions permitted by the opening of the valve in relation to the ground seat 23 in the partition 17. By keeping constant contact at the points 41 and 42, chatter will be definitely eliminated, and when the handle 30 is at a pre-determined position and moved forward in the slot 34, it will cause the cam 32 to move horizontally, affecting the position of the stems 39 and 25 and 25'.

The control of the amount of liquid entering the mixing chamber 19 is definitely determined by the shape and contour of the surface 33 of the cam 32. The chamber 19 can be of any pre-determined size to afford a capacity sufficient to take care of the flow from the inlets 14 and 15 and the size of the spigot 13 may also be determined by the requisites of the fluid required.

The port 28 is merely a bleed passage for any liquid entering the operating chamber 21 past the valve stems 25 and 25' and the stuffing nuts 26, and takes care of any accumulation of liquid in the upper chamber 21.

Obviously, in the embodiment of my invention as shown and described, there may be many changes in the form and configuration of the various parts, I do not wish to limit myself to the specific construction shown and reserve the right to make such changes as I deem necessary and convenient without departing from the spirit of my invention or the scope of the appended claims.

Having thus described my invention, what I claim and desire to secure by Letters Patent in the United States is:

1. A mixing valve of the character described

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comprising a housing provided with a pair of supply chambers, a mixing chamber and an operating chamber, said housing further provided with a pair of supply tubes entering said supply chambers, a passage leading from each of said supply chambers to said mixing chamber, an annular cam provided with a face providing high and low contact surfaces, said cam disposed within said operating chamber, a vertical stem supporting said cam and extending outward through the top of said housing, an outlet through the side wall of said housing from said mixing chamber, a pair of valves having upwardly extending stems vertically disposed, each of said valves disposed within said supply chamber for controlling the flow of liquid through one of said passages, said valve stems leading upward through said mixing chamber into said operating chamber, a pair of pivotally mounted link members within said operating chamber, said link members each being provided with a vertical member on one end and hingedly attached to one of said valve stems at this other end, the upper end of the vertical member on each of said links and the upper end of each of said valve stems arranged for constant frictional contact with said surfaces of the face on said cam, thereby causing said valves to operate when the vertical stem on said cam is revolved.

2. A device as described in claim 1, in which the housing cap is provided with a slotted aperture at its upper end through which the stem passes to permit lateral movement of the vertical stem, thereby causing a change in the point of contact of the valve stems and the vertical members on said link members with the irregular face of said cam.

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