Feb. 12, 1952 J. L. HUDSON 2,585,247

MIXING FAUCET

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Fig. 3.

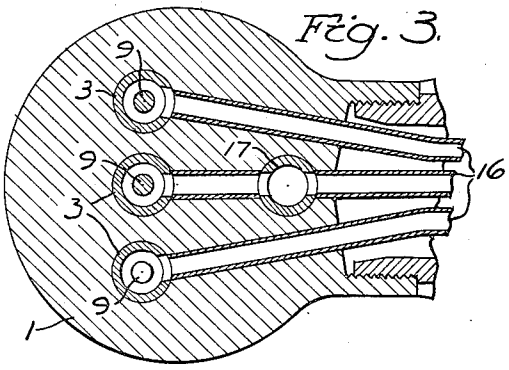


Fig. 2.

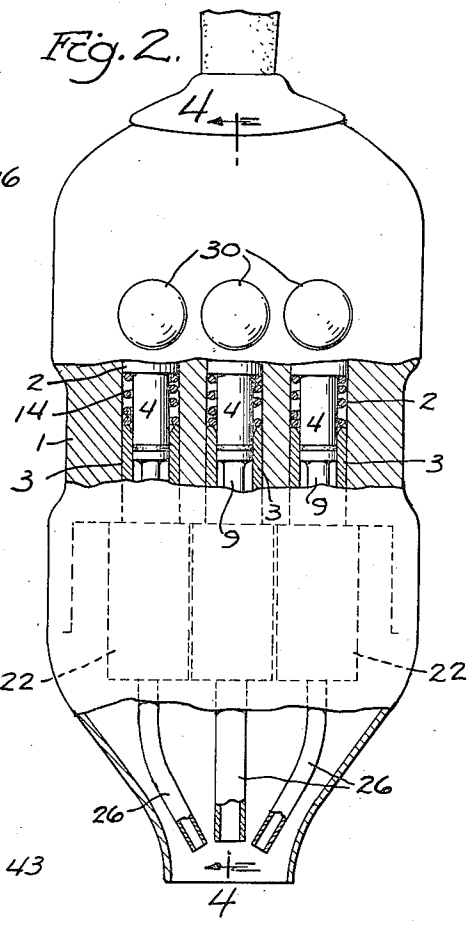


Fig. 1.

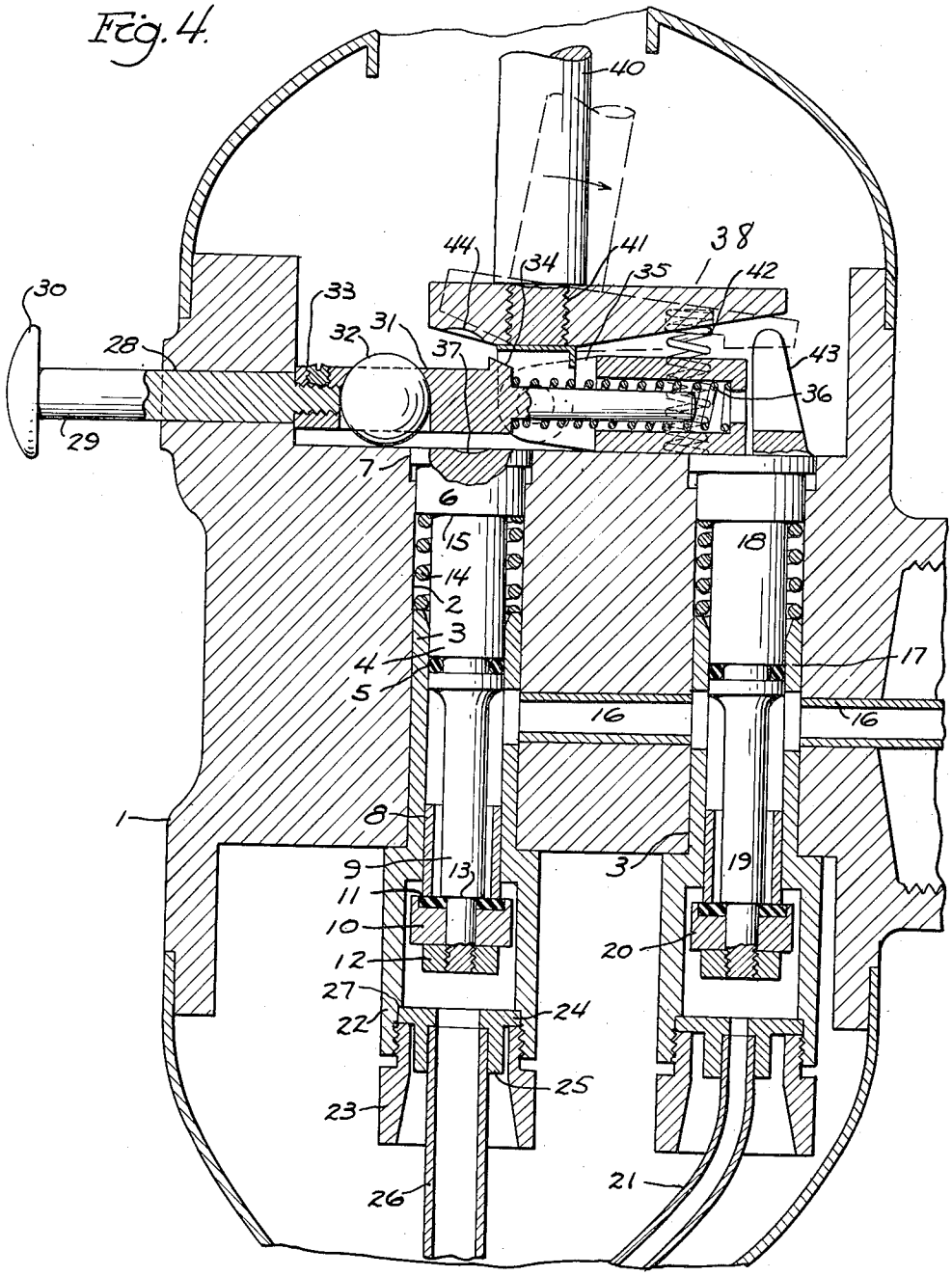
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Fig. 4.



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Fig. 5.

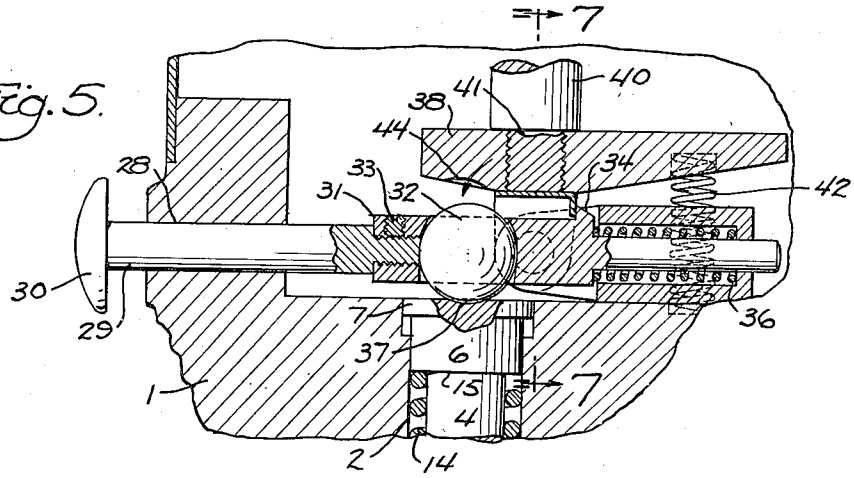
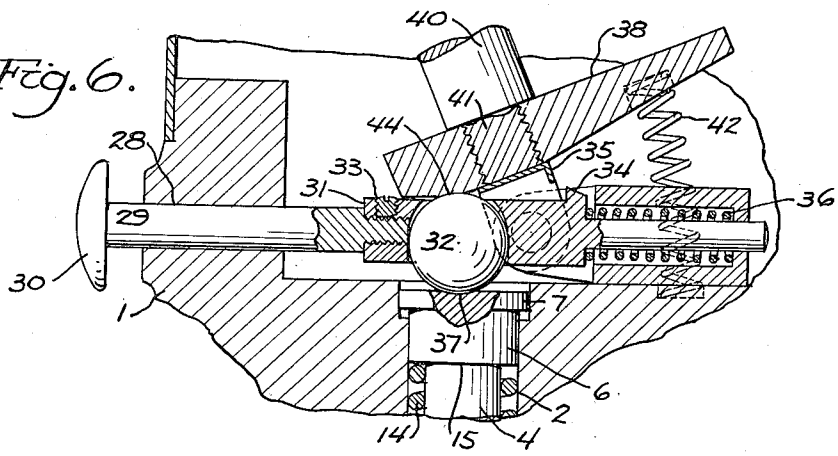


Fig. 6.



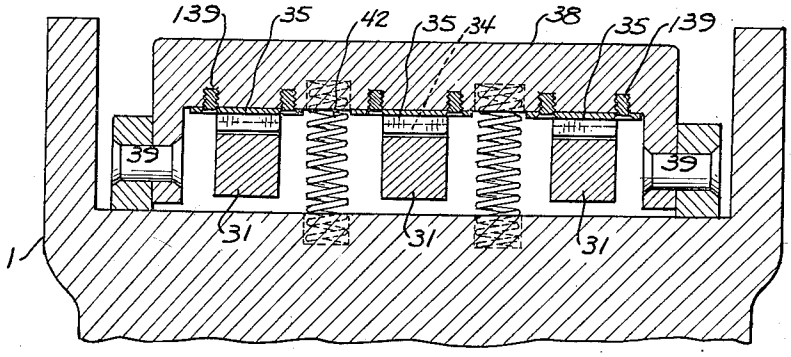


Fig. 7.

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UNITED STATES PATENT OFFICE

2,585,247

MIXING FAUCET

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Application July 28, 1949, Serial No. 107,295

11 Claims. (Cl. 277—20)

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This invention relates to mixing faucets, particularly mixing faucets for mixing soft drinks such as soda water and syrups, coke drinks or combinations of soda water and soft drinks. The usual dispensing faucet requires the swinging of the lever handle to a particular position in order to release the syrup selected in operating the faucet. The operator may mistake the syrup or other soft drink and consequently waste the material drafted from the faucet.

It is the object of the present invention to provide a mixing faucet which obviates this difficulty by providing push buttons to establish the selection and then the operating lever need only be pulled forward to provide the proper mixture. A syrup and soda water or two or more syrups and the soda water may be mixed with one pull of the lever. By pushing the lever rearward a high velocity jet may be used to provide the foam or fizz on the soda water or other soft drink such as root beer. I have shown only tubes for two syrups or syrup and a soft drink in the drawings, but obviously a larger number of syrups or soft drinks can be provided by affording a larger number of dispensing tubes, valves and push buttons.

Referring to the drawings:

Figure 1 is a side elevation of the dispensing faucet partly in section.

Figure 2 is a front elevation partly in section taken on the line 2—2 of Figure 1.

Figure 3 is a cross section taken on the line 3—3 of Figure 1.

Figure 4 is a vertical section taken on the line 4—4 of Figure 2.

Figure 5 is a fragmentary vertical section taken through the mixing faucet showing how the plungers and push buttons operate.

Figure 6 is a similar section showing the hand lever after it has been swung to position for dispensing the liquid.

Figure 7 is the section on the line 7—7 of Figure 5.

The body or the housing 1 of the faucet is a casing which is provided with a plurality of bores or cylindrical chambers 2 here shown as 3 in number. A cylinder or fitting 3 is press-fitted into the cylindrical chamber 2. In this cylinder is guided a cylindrical valve stem 4 which is provided with a packing ring 5. This valve stem 4 has an enlarged head 6 which is guided in the cylindrical chamber. This head has an enlarged annular flange 7 at the upper end. A bushing 8 is press-fitted into the lower end of the cylindrical chamber 2 and the lower end of this bushing

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forms a valve seat. The valve stem has a reduced portion 9. Bolted on the lower end of this stem and against a shoulder is valve 10 which is provided with a packing 11 adapted to engage the lower end of the bushing 8 or the valve seat. Nut 12 screws onto the reduced end of the valve stem and jams the valve 11 up against the shoulder 13. The coiled expansion spring 14 bearing against the shoulder 15 formed by the enlarged head 6 normally keeps the valve seated against the valve seat.

It will be seen from Figures 2 and 3 that three cylindrical chambers and three valves are shown. The liquid syrup, soda water or other soft drink comes into the body of the casing through tube 16 which is connected with a tank in which the material is stored and subjected to pressure. There are three of these tubes 16 shown in the drawings but obviously a greater number could be provided. The center tube 16 is intended for soda water. This tube is intersected at the rear by a cylinder 17 which contains the cylindrical valve 18 with valve stem 19 and valve 20. This is the same valve construction as the valves located at the front of the faucet but this valve controls a high speed jet that is discharged through the tube 21 as will later be described.

At the lower ends of the cylinders 3 the cylinder or fitting enlarges to form the valve housing 22 and into this screws a sleeve 23 which engages the flange 24 on the end of the fitting 25 secured to the end of the dispensing tube 26. When the sleeve 23 is screwed in place it jams the flange 24 up against the shoulder 27 and connects the dispensing tube with the valve housing 22. The dispensing tubes 26 at the front of the faucet have a larger I. D. than the high speed jet tube 21 so that the liquid dispensed from the tubes 26 does not have the velocity that the liquid dispensed through the tube 21 has.

In the upper portion and at the front of the body 1 are a plurality of bored out guide-ways 28 in which are slidable plungers 29 which have the button-like heads 30. These plungers are screwed into the slides 31, each of which loosely catches a ball 32. Set-screw 33 holds the plunger 29 to the slide after the plunger has been screwed in place. Each slide has a beveled nub 34 which is arranged to snap behind the spring latch 35 when the plunger is pushed in. This holds the plunger in the inward position against the pressure of coil spring 36 which tends to force the plunger to the outer position. Each of the heads 6 on the valve stems is provided with a spherical recess 37 in which the ball 32 can

rest when the plunger is pushed in as shown in Figures 5 and 6.

Refer to Figure 7. An actuating plate or yoke **38** is pivoted on trunnions **39** at the end of the yoke as shown in this Figure 7. The spring latch strips **35** are secured to the underside of this yoke by screws **139**. The lever **40** has at its lower end reduced and threaded as at **41** so that the lever may be screwed into the plate **38**. The coil springs **42** near the rear end of the actuating plate tend to hold the lever in its neutral or inactive position as shown in the full lines of Figures 4 and 5.

The valve stem **18** at the rear of the faucet which guards the high velocity soda water line has on its head an upwardly projecting lug **43**. When a push button **30** is pushed in, the slide is pushed in and lug **34** snaps behind the latch spring **35** and locks the push button and slide in the inner position as shown in Figure 5. If now the dispensing lever **40** is pulled forward this will push downwardly on the ball or balls of the slides that have been pushed inwardly to select the liquids that are to be mixed and dispensed. The usual selection will be the center push button and one of the push buttons that controls one or more syrups. Hence the valves controlling the syrup line and the soda water flows out of the nozzle of the faucet and into the glass held thereunder. If it is desired to add a small amount of another syrup before the glass is full, another push button may be pushed in and the two syrups and the soda water will flow into the glass. If it is desired to add foam or fizz on the top of the drink, the lever is thrown to the rear where it will encounter the lug **43** which controls the valve **20**. This will be pushed down when the lever takes the position shown in the dotted line of Figure 4. Soda water under high velocity will now be dispensed through the nozzle of the faucet by reason of opening the passageway through the small diameter tube **21**.

The actuating plate or yoke **38** has above each ball a spherical recess **44** for retaining the ball and the slide and push button in the inward position when the yoke is tipped to the forward position shown in Figure 6. When tipped to this position the spring latch **35** releases lug **34** on the slide. When the lever is released spring **42** pulls the lever back to the neutral position and immediately after the yoke starts to turn back to its horizontal position the recesses **44** in the front of the yoke will release the ball or balls **32** and springs **36** shoot the slides, balls, and push buttons to the outer or forward position.

From the above description it will be apparent that a faucet is provided which can mix two or more syrups or soft drinks with soda water under conditions that will make the mixing practically fool-proof because the soda water operator has to select the syrup or syrups deliberately before the operating handle is pulled forward to discharge the liquids. As already stated, this arrangement permits one or more of a number of syrups or soft drinks and soda water to be mixed. By a simple reversing operation of the lever it is possible to provide high velocity soda water to afford foam or fizz on the top of the drink.

What I claim is:

1. A mixing faucet having in combination, a body provided with a plurality of guideways running fore and aft and provided with valve chambers intersecting the guideways at substantially right angles and directed up and down, each chamber having a valve seat, valves, one located in each valve chamber and arranged to engage a valve seat, passageways for connecting sources of liquid under pressure with the valve chambers, outlet passages connected with the valve chambers and controlled by said valves, each of the valves having fastened thereto an actuating head at its upper end, a plurality of slides and plungers slidable in said guideways in pairs, one slide and one plunger fastened together, each slide provided with a freely movable member catched in the slide and arranged to rest over the actuating head when the plunger and slide are pushed rearward, a lever handle fastened to an actuating plate which may be moved to actuate the movable member or members in the slides to thereby force the valve or valves downwardly to open one or more of the valve chambers and discharge one or more liquids when one or more plungers are rearwardly disposed at the time the actuating member is actuated.

2. A mixing faucet having in combination a body provided with a plurality of guideways running fore and aft and provided with valve chambers intersecting the guideways at substantially right angles and directed up and down, each having a valve seat, valves, one located in each valve chamber and arranged to engage said valve seat, passageways for connecting sources of liquids under pressure with the valve chambers, each of the valves having fastened thereto an actuating head at its upper end, a plurality of slides and plungers slidable in said guideways in pairs, one slide and one plunger fastened together, each slide provided with a freely movable member catched in the slide and arranged to rest over the actuating valve head when the plunger and slide are pushed rearwardly, a lever handle with an actuating plate which may be moved to actuate the movable member or members in the slides when the hand lever is operated to thereby force the valve or valves downwardly to open one or more of the valve chambers and discharge one or more liquids when one or more plungers and slides are rearwardly disposed at the time the actuating member is actuated, the said freely movable members being balls.

3. A mixing faucet having in combination a body provided with a plurality of guideways running fore and aft and provided with valve chambers intersecting the guideways at substantially right angles and directed up and down, each having a valve seat, valves, one located in each valve chamber and arranged to engage said valve seat, each of the valves having fastened thereto an actuating head at its upper end, a plurality of slides and plungers slidable in said guideways in pairs, one slide and one plunger fastened together, each slide provided with a freely movable member catched in the slide and arranged to rest over the actuating head when the plunger and slide are pushed in, a lever handle with an actuating plate which may be moved to actuate the movable member or members in the slides when the hand lever is operated to thereby force the valve or valves downwardly to open one or more of the valve chambers and discharge one or more liquids when one or more plungers are rearwardly disposed at the time the actuating member is actuated, the said freely movable members being balls and the actuating plate having recesses to catch the balls when the actuating plate is operated.

4. A mixing faucet having in combination a body provided with a plurality of guideways running fore and aft and provided with valve cham-

bers intersecting the guideways at substantially right angles and directed up and down, each chamber having a valve seat, valves, one located in each valve chamber and arranged to engage said valve seat, each of the valves having fastened thereto an actuating head at its upper end, a plurality of slides and plungers slidable in said guideways in pairs, one slide and one plunger fastened together, each slide provided with a freely movable member catched in the slide and arranged to rest over the actuating head when the plunger and slide are pushed in, a lever handle having an actuating plate which may be moved to actuate the movable member or members in the slides when the hand lever is operated to thereby force the valve or valves downwardly to open one or more of the valve chambers and discharge one or more liquids when one or more plungers are rearwardly disposed at the time the actuating member is actuated, the said freely movable members being balls and the actuating plate having recesses to catch the balls when the actuating plate is operated, the actuating plate and slide provided with a latch to hold the slides and plungers in the rearward position, said latches releasing when the actuating plate is operated.

5. A mixing faucet having in combination a body provided with a plurality of guideways running fore and aft and a plurality of valve chambers intersecting the guideways at substantially right angles and directed up and down, a plunger in each guideway normally spring-pressed forwardly, a slide connected with each plunger, each slide provided with a recess, a freely movable member in each recess, an actuating plate supported for movement in said body and arranged when actuated to catch the freely movable members of such slides as are pushed to the rearward position, means for catching the slide and latching it in its rearward position, a lever connected with the plate for operating the same, the said chambers having valve seats and a plurality of valves, one in each valve chamber, arranged to be contacted and operated by said freely movable members, whereby when the lever is swung the plate swings to contact the freely movable members of the slides that are pushed rearwardly and catched, thereby simultaneously opening selected valves to allow flow of liquid.

6. A mixing faucet having in combination a body provided with a plurality of guideways running fore and aft and a plurality of valve chambers intersecting the guideways at substantially right angles and directed up and down, a plunger in each guideway normally spring-pressed forwardly, a slide connected with each plunger, each slide provided with a recess, a freely movable member in each recess, an actuating plate supported for pivotal movement in said body and arranged when actuated to contact the freely movable members of such slides as are pushed to the rearward position, means for catching the slide and latching it in its rearward position, a lever connected with the plate for operating the same, the said chambers having a plurality of valve seats and a plurality of valves, one in each valve chamber, whereby when the lever is swung the plate swings to contact the freely movable members of the slides that are pushed rearwardly and latched, thereby simultaneously opening selected valves to allow flow of liquid, each freely movable member being a ball, and the actuating plate having a recess to engage each ball when the plate is moved, said movement releasing the latch engagement between the plate and the slide and at the same time holding the slide by a recess in the plate catching a ball.

7. A mixing faucet having in combination a body provided with a plurality of guideways running fore and aft and a plurality of valve chambers intersecting the guideways at substantially right angles and directed up and down, a plunger in each guideway normally spring-pressed forwardly, a slide connected with each plunger, each slide provided with a recess, a freely movable member in each recess, an actuating plate pivoted for movement on said body and arranged when actuated to contact the freely movable members of such slides as are pushed to the rearward position, means for catching the slide and latching it in its rearward position, a lever connected with the plate for operating the same, the said chambers having valve seats and a plurality of valves one in each valve chamber, whereby when the lever is swung the plate swings to contact the freely movable members of the slides that are pushed rearwardly and latched, thereby simultaneously opening selected valves to allow flow of liquid, each freely movable member being a ball, and the actuating plate having a recess to engage each ball when the plate is moved, said movement releasing the latch engagement between the plate and the slide and at the same time holding the slide by the said recess in the plate catching the ball, each of said valves having a valve stem and an actuating head which the ball contacts to control the operation of the valve.

8. A mixing faucet having in combination a body provided with a plurality of guideways running fore and aft and a plurality of valve chambers intersecting the guideways at substantially right angles and directed up and down, a plunger in each guideway normally spring-pressed forwardly, a slide connected with each plunger, each slide provided with a recess, a freely movable member in each recess, an actuating plate supported for movement in said body and arranged when actuated to contact the freely movable members of such slides as are pushed to the rearward position, means for catching each slide and latching it in its rearward position, a lever connected with the plate for operating the same, the said chambers having valve seats and a plurality of valves, one in each valve chamber, arranged to be contacted and operated by said freely movable members, whereby when the lever is swung the plate swings to contact the freely movable members of the slides that are pushed rearwardly and latched, thereby simultaneously opening selected valves to allow flow of liquid, each freely movable member being a ball and the actuating plate having a recess to engage each ball when the plate is moved, said movement releasing the latch engagement between the plate and the slide and at the same time holding the slide by the said recess in the plate catching the ball, each of said valves having a valve stem and an actuating head which the ball contacts to control the operation of the valve, the said head also having a spherical recess to engage with the ball when the slide and ball is pushed rearward.

9. A mixing faucet having in combination a body provided with a plurality of guideways running fore and aft and a plurality of valve chambers intersecting the guideways at substantially right angles and directed up and down, a plunger in each guideway normally spring-pressed forwardly, a slide connected with each plunger, each slide provided with a recess, a freely movable

member in each recess, an actuating plate supported for movement on said body and arranged when actuated to contact the freely movable members of such slides as are pushed to the rearward position, means for catching each slide and latching it in its rearward position, a handle connected with the plate for operating the same, the said chambers having valve seats and a plurality of valves, one in each valve chamber, arranged to be contacted and operated by said movable members, whereby when the handle is swung the plate swings to contact the freely movable members of the slides that are pushed rearwardly and latched, thereby simultaneously opening selected valves to allow flow of liquid, the said actuating plate and lever being tiltably supported on trunnions.

10. A mixing faucet having in combination a body provided with a plurality of guideways running fore and aft and a plurality of valve chambers intersecting the guideways at substantially right angles and directed up and down, a plunger in each guideway normally spring-pressed forwardly, a slide connected with each plunger, each slide provided with a recess, a freely movable member in each recess, an actuating plate supported for movement in said body and arranged when actuated to contact the freely movable members of such slides as are pushed to the rearward position, means for catching each slide and latching it in its rearward position, a lever connected with the plate for operating the same, the said chambers having valve seats and a plurality of valves, one in each valve chamber, arranged to be contacted and operated by said freely movable members, whereby when the lever is swung the plate swings to contact the freely movable members of the slides that are pushed rearwardly and latched, thereby simultaneously opening selected valves to allow flow of liquid, an additional independent valve chamber, a separate passageway leading from a carbonated water under pressure source to said valve chamber, a restricted outlet passage, and a valve located in said independent valve chamber with a valve stem located and guided in the body behind the other valves

and the actuating member, said independent valve having a projection which can be contacted by the actuating plate when the same is moved in a direction different than for operating the first mentioned valves.

11. A mixing faucet having in combination a body provided with a plurality of guideways running fore and aft and a plurality of valve chambers intersecting the guideways at substantially right angles and directed up and down, a plunger in each guideway normally spring-pressed outwardly, a slide connected with each plunger, each slide provided with a recess, a freely movable member in each recess, an actuating plate supported for movement in said body and arranged when actuated to contact the freely movable members of such slides as are pushed to the rearward position, means for catching each slide and latching it in its rearward position, a lever connected with the plate for operating the same, the said chambers having valve seats and a plurality of valves, one in each valve chamber, arranged to be contacted and operated by said freely movable members, whereby when the lever is swung the plate swings to contact the freely movable members of the slides that are pushed rearwardly and latched, thereby simultaneously opening selected valves to allow flow of liquid, the said actuating plate having catches secured to the underside, each catch arranged to be engaged by a lug on the corresponding slide when the slide is pushed rearwardly to temporarily latch the slide and the plunger in the rearmost position.

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