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J. J. BOOTH ET AL
DISPENSING VALVE UNIT

2,921,605

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2 Sheets-Sheet 1

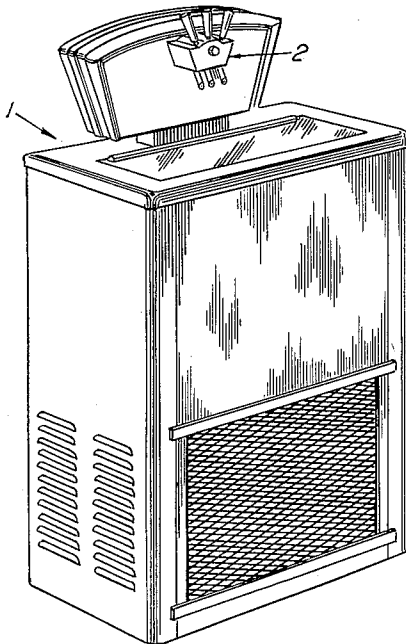


Fig. 1

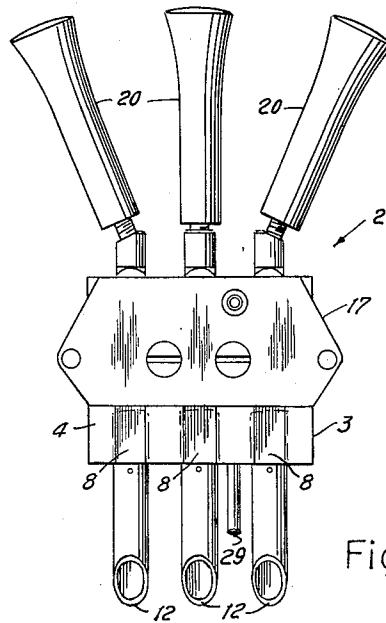


Fig. 2

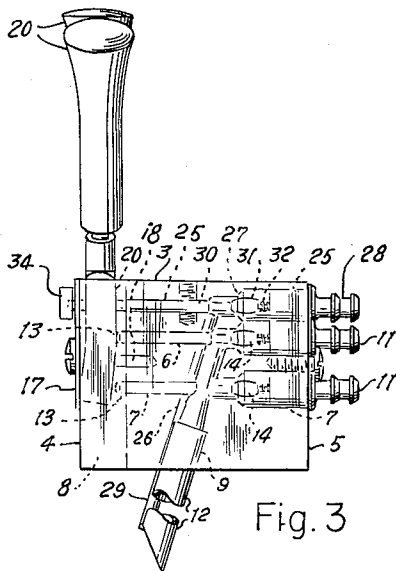


Fig. 3

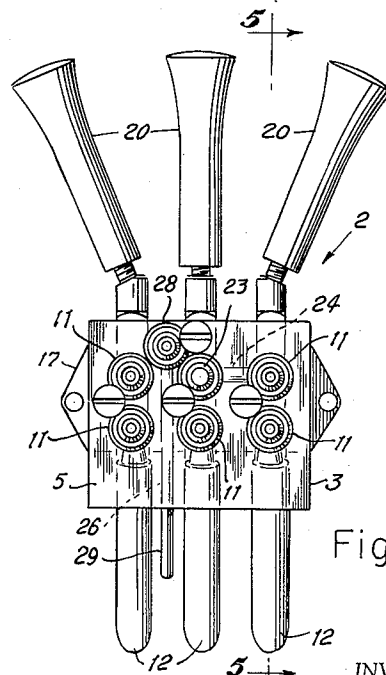


Fig. 4

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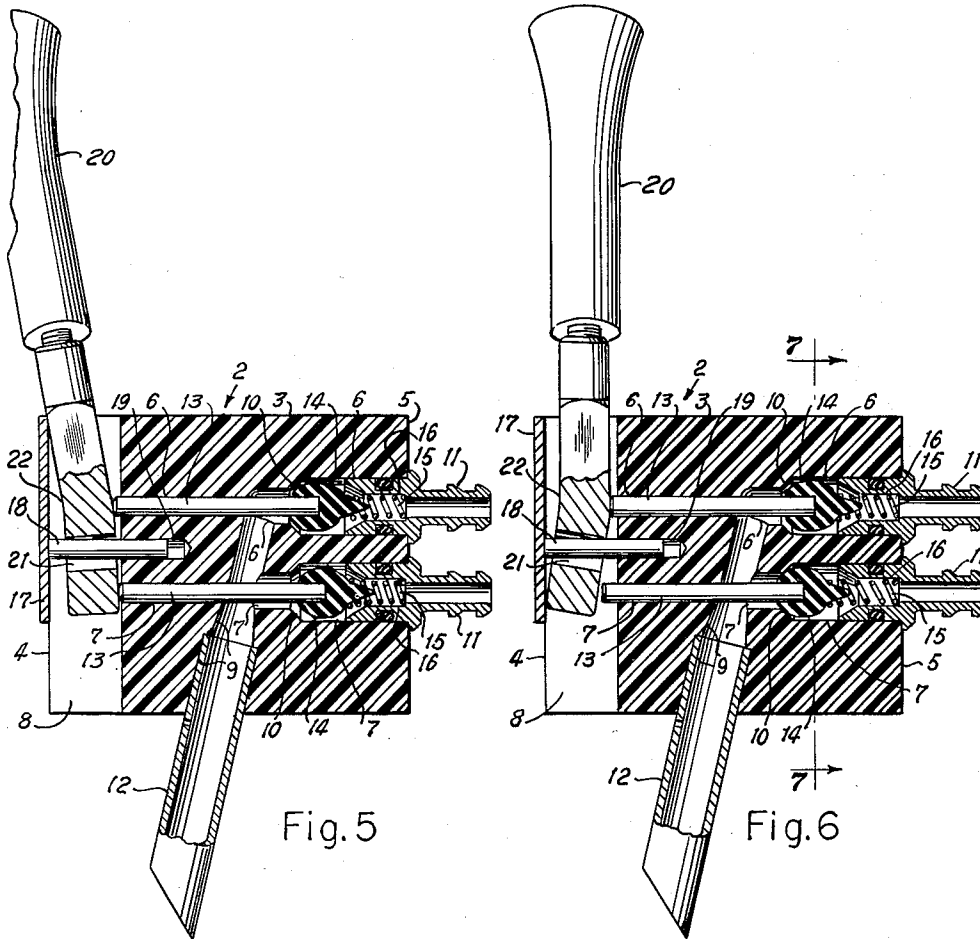
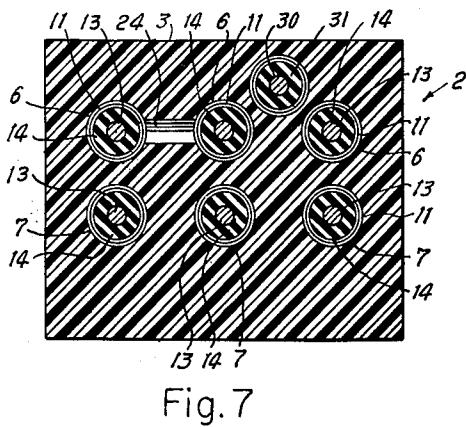
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DISPENSING VALVE UNIT

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3 Claims. (Cl. 137-636)

This invention relates to a dispensing valve unit, and it concerns more particularly an arrangement of valves for use in dispensing beverages.

An object of the invention is to provide a dispensing valve unit comprising a plurality of pairs of coacting, normally closed dispensing valves arranged in a common housing therefor, the valves of each pair having a common discharge spout and a common handle capable of acting on one of the valves, or both of them simultaneously, to open one or both of the valves.

Another object of the invention is to provide a dispensing valve unit which is characterized by its compactness, and in which the dispensing valves are closely spaced relative to each other, and each of the discharge spouts and handles is capable of controlling the flow of fluids from two different sources, whereby a variety of beverages may be conveniently dispensed from the same valve unit.

Another object of the invention is to provide a dispensing valve unit which is capable of mixing automatically, in predetermined proportions, the components of mixed drinks, and in which the openings through the several dispensing valves are of predetermined size and automatic mixing is accomplished by simple manipulation of a single handle which controls the flow of two components simultaneously.

Another object of the invention is to provide a dispensing valve unit which is characterized by its versatility, and in which one of a pair of dispensing valves which are operable by a common handle, and having a common discharge spout, may be connected to a source of syrup for use in making mixed beverages, while the other valve of the pair may be connected to a source of carbonated or plain water, so that in one operating position of the handle, for example, mixed beverages containing syrup and water, either carbonated or plain, may be dispensed through the common discharge spout, and in another operating position of the handle, water alone, either carbonated or plain, may be dispensed through the same discharge spout.

The invention will be readily understood by referring to the following description and the accompanying drawing, in which:

Figure 1 is a perspective view of a beverage dispensing cabinet having a valve unit embodying the invention incorporated therein;

Figure 2 is a front elevational view of the valve unit;

Figure 3 is a side elevational view;

Figure 4 is a rear elevational view;

Figure 5 is a sectional view taken on the line 5-5 of Figure 4, showing one of the three pairs of valves, and the handle therefor, in one of their respective operating positions;

Figure 6 is a view similar to Figure 5, showing the valves and the handle therefor in another of their respective operating positions; and

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Figure 7 is a sectional view taken on the line 7-7 of Figure 6.

Referring to Figure 1 of the drawing, the numeral 1 designates generally a beverage dispensing cabinet, while the numeral 2 indicates generally a valve unit embodying the invention which is incorporated in the cabinet.

Referring to Figures 2 to 7 of the drawing, the valve unit 2 includes a housing 3, which consists of a substantially solid block having parallel front and rear faces, numbered 4 and 5, respectively. A plurality of pairs of horizontally extending bores, numbered 6 and 7, respectively, are formed in the housing 3, and extend through its rear face 5. The bores 6 and 7 are arranged in parallel rows, the bores 6 and 7 of each pair being spaced one above the other and the several pairs of bores 6 and 7 being spaced laterally relative to each other.

A plurality of vertical grooves 8 are formed in the front face 4 of the housing 3. Each of the grooves 8 communicates with the bores 6 and 7 of one pair.

A plurality of downwardly and outwardly inclined bores 9, which are formed in the housing 3, each communicate with the bores 6 and 7 of one pair intermediate their ends, and extend through the under side of the housing 3.

Each of the bores 6 and 7 is enlarged intermediate its ends to form a beveled, rearwardly facing internal shoulder comprising a valve seat 10. A tubular inlet fitting 11 is received in the rearward end of each of the bores 6 and 7, and extends outwardly from the housing 3. A discharge spout 12 is received in each of the bores 9, and extends forwardly and downwardly from the housing 3.

A valve stem 13 is reciprocable in each of the bores 6 and 7, and normally extends forwardly into the adjacent vertical groove 8. A resilient valve member 14 is connected to one end of each of the valve stems 13 for engagement with the adjacent valve seat 10. A compression spring 15 is received in a spring seat 16 formed in each of the inlet fittings 11. The spring 15 acts on the adjacent valve member 14 to yieldably urge it in engagement with its seat 10.

A flat plate 17 is secured to the front face 4 of the housing 3 in juxtaposed, parallel relation thereto. A plurality of rods 18 are each connected to the plate 17, and extend rearwardly therefrom. The rods 18 are each spaced substantially equidistantly between the bores 6 and 7 of one pair, and are arranged in parallel relation thereto. Each of the rods 18 extends across the adjacent vertical groove 8, and has one of its ends received in a bore 19 provided therefor in the housing 3.

A plurality of vertically disposed elongated handles 20 each have its lower end portion received in one of the vertical grooves 8, and extend upwardly therefrom. The handles 20 each have a transverse opening 21 therein above its lower end and loosely surrounding the adjacent rod 18.

The handles 20 are each bent forwardly and upwardly at an obtuse angle above the opening 21, as at 22. The handles 20 are each operable as a lever whereby, upon moving the upper end of the handle 20 forwardly about a pivot formed by the upper edge of the plate 17, the lower end portion of the handle 20 acts upon both of the valve stems 13 of the adjacent pair simultaneously, to disengage the valve members 14 from their seats 10. Upon moving the upper end of the handle 20 rearwardly about a pivot formed by the lower end of the handle 20, the lower end portion of the handle 20 acts upon the uppermost valve stem 13 of the adjacent pair only, to disengage the valve member 14 from its seat 10.

The discharge spouts 12 and the handles 20, as well as the inlet fittings 11, are closely spaced relative to each

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other, and each of the discharge spouts 12 and handles 20 controls the flow of fluids from two different sources. Thus a variety of beverages may be conveniently dispensed from the valve unit 2.

The openings formed by the respective valve members 14, in conjunction with the valve seats 10, are of predetermined size, so that automatic mixing is accomplished by simple manipulation of a single handle 20, which controls the flow of each of two components thereof simultaneously.

The invention contemplates that one of the inlet fittings 11 of each pair may be connected to a source of syrup for use in making mixed beverages, while the other inlet fitting 11 may be connected to a source of carbonated or plain water. In one operating position of the handle 20, for example, mixed beverages containing syrup and water, either carbonated or plain, may be dispensed through the common discharge spout 12. In another operating position of the handle 20, water alone, either carbonated or plain, may be dispensed through the same discharge spout 12.

One of the inlet fittings 11 may be connected to a source of fluid to be dispensed which is common to two adjacent dispensing valves of the unit 2. The corresponding inlet fitting 11 of the other valve may be plugged, as at 23, and a fluid passage 24 may be formed in the housing 3 connecting the corresponding bores 6 at their sides, rearwardly of the valve members 14, whereby the same fluid may be dispensed from either of the valves, or from both of them simultaneously.

A horizontally extending bore 25, which is formed in the housing 3, extends through its front and rear faces 4 and 5. The bore 25 is positioned above and between two pairs of bores 6 and 7, and is arranged in parallel relation thereto. A downwardly and outwardly inclined bore 26, which is formed in the housing 3, communicates with the bore 25 intermediate its ends, and extends through the under side of the housing 3. The bore 26 is of smaller cross-sectional area than the bores 9.

The bore 25 is enlarged intermediate its ends to form a beveled, rearwardly facing internal shoulder comprising a valve seat 27. A tubular inlet fitting 28 is received in the rearward end of the bore 25. A discharge spout 29 is received in the lower end of the bore 26, and extends forwardly and downwardly from the housing 3. A valve stem 30 is reciprocable in the bore 25. A resilient valve member 31 is connected to one end of the valve stem 30 for engagement with the valve seat 27. A compression spring 32 is received in a spring seat formed in the inlet fitting 28. The spring 32 acts on the valve member 31 to yieldably urge it in engagement with its seat 27. A button 34 is connected to the front end of the valve stem 30. The valve member 31 is disengaged from its seat 27 upon pressing the button 34.

The dispensing valve last described advantageously may be used to dispense a stream of fluid, such as carbonated water, at high velocity.

The invention may be modified in various ways without departing from the spirit and scope thereof.

What is claimed is:

1. A dispensing valve unit comprising a housing consisting of a substantially solid block having parallel front and rear faces, a plurality of pairs of horizontally extending bores in the housing extending through its rear face, the bores being arranged in parallel rows, the bores of each pair being spaced one above the other and the several pairs of bores being spaced laterally relative to each other, a plurality of vertical grooves in the front face of the housing, each of the grooves communicating with the bores of one pair, a plurality of downwardly and outwardly inclined bores in the housing each communicating with the first mentioned bores of one pair intermediate their ends and extending through the under side of the housing, each of the first mentioned bores being enlarged intermediate its ends to form a beveled, rearwardly fac-

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ing internal shoulder comprising a valve seat, a tubular inlet fitting received in the rearward end of each of the first mentioned bores and extending outwardly from the housing, a discharge spout received in the lower end of each of the last mentioned bores and extending forwardly and downwardly from the housing, a valve stem reciprocable in each of the first mentioned bores and normally extending forwardly into the adjacent vertical groove, a resilient valve member connected to one end of each of the valve stems for engagement with the adjacent valve seat, a compression spring received in a spring seat formed in each of the inlet fittings, and acting on the adjacent valve member to yieldably urge the valve member in engagement with its seat, a flat plate secured to the front face of the housing in juxtaposed, parallel relation thereto, a plurality of rods each connected to the plate and extending rearwardly therefrom, the rods each being spaced substantially equidistantly between the first mentioned bores of one pair, each of the rods extending across the adjacent vertical groove and having one of its ends received in a bore provided therefor in the housing, a plurality of vertically disposed elongated handles each having its lower end portion received in one of the vertical grooves, and extending upwardly therefrom, and having a transverse opening therein spaced above its lower end and loosely surrounding the corresponding rod, the handles each being bent forwardly and upwardly at an obtuse angle at a point spaced above the opening therein, the handles each being operable as a lever whereby, upon moving the upper end of the handle forwardly about a pivot formed by the upper edge of the plate, the lower end portion of the handle acts upon both of the valve stems of the adjacent pair simultaneously, to disengage the valve members from their seats, and upon moving the upper end of the handle rearwardly about a pivot formed by the lower end of the handle, the lower end portion of the handle acts upon the uppermost valve stem of the adjacent pair only, to disengage the valve member from its seat.

2. A dispensing valve unit as described in claim 1 in which one of the inlet fittings is adapted to be connected to a source of fluid to be dispensed which is common to two adjacent dispensing valves of the unit, the corresponding inlet fitting of the other valve being plugged and a fluid passage being formed in the housing connecting the corresponding first mentioned bores at their sides, rearwardly of the valve members, whereby the same fluid may be dispensed from either of the valves, or from both of them simultaneously.

3. In a dispensing valve unit as described in claim 1, a horizontally extending bore formed in the housing and extending through its front and rear faces, the last mentioned horizontally extending bore being positioned above and between two pairs of the first mentioned horizontally extending bores and arranged in parallel relation thereto, a downwardly and outwardly inclined bore formed in the housing and communicating with the last mentioned horizontally extending bore intermediate its ends and extending through the under side of the housing, the last mentioned inclined bore being of substantially smaller cross-sectional area than the first mentioned inclined bores, the last mentioned horizontally extending bore being enlarged intermediate its ends to form a beveled, rearwardly facing internal shoulder comprising a valve seat, a tubular inlet fitting received in the rearward end of the last mentioned horizontally extending bore, a discharge spout received in the lower end of the last mentioned inclined bore, and extending forwardly and downwardly from the housing, a valve stem reciprocable in the last mentioned horizontally extending bore, a resilient valve member connected to one end of the last mentioned valve stem, a compression spring received in a spring seat formed in the last mentioned inlet fitting and acting on the last mentioned valve member to yieldably urge it in engagement with its seat, and a button con-

nected to the front end of the last mentioned valve stem, the arrangement being such that the last mentioned valve member is disengaged from its seat upon pressing the button.

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