Sept. 13, 1927. 1,642,623

H. A. NIVEN

DISPENSING APPARATUS

Filed Feb. 14, 1927

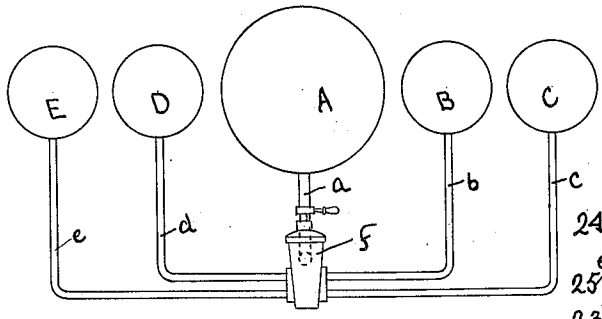


Fig. 1

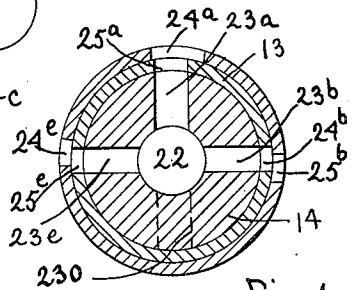


Fig 4

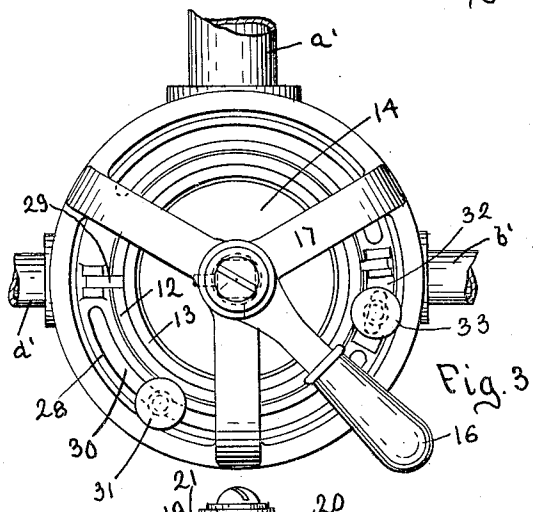


Fig. 3

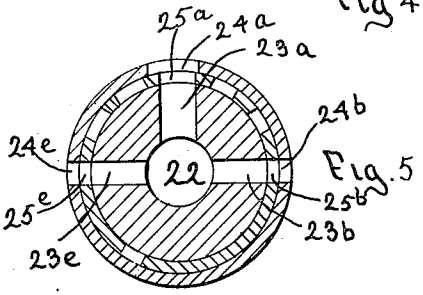


Fig. 5

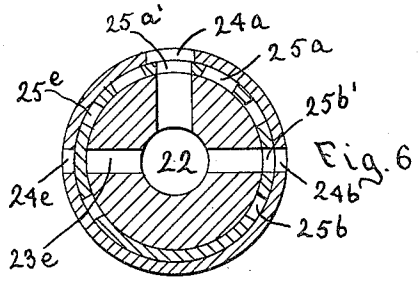


Fig. 6

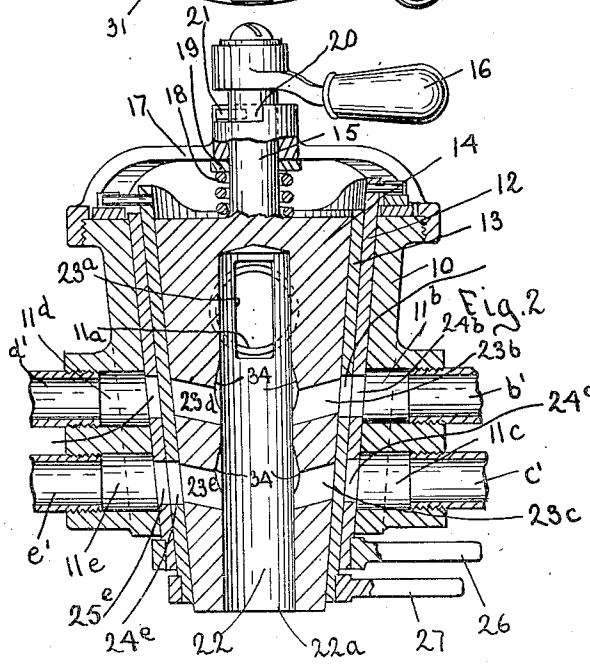


Fig. 2

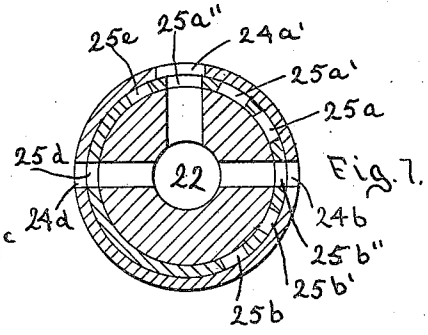


Fig. 7.

INVENTOR

Harry A. Niven

by Fred W. McArdle

Att'y

Patented Sept. 13, 1927. 1,642,623

UNITED STATES PATENT OFFICE.

HARRY A. NIVEN, OF BOSTON, MASSACHUSETTS.

DISPENSING APPARATUS.

Application filed February 14, 1927. Serial No. 168,041.

My invention relates to dispensing apparatus, and particularly to that class in which two or more fluids are to be blended in a uniform mixture, as in the case of beverages such as soda with various syrups, coffee and cream, and with oil, the blending of different grades.

One object of my invention is to provide means whereby fluids from separate sources of supply may be blended in a determind proportion and composition.

A second object is to provide means whereby both the composition and the proportions of a mixture may be varied by adjustable elements.

My invention consists in the novel means and combinations by means of which the above objects are attained.

The invention is fully described in the accompanying specifications and claims, and illustrated in the drawings forming a part thereof.

In the drawings, Fig. 1 illustrates my invention diagrammatically.

Fig. 2 is a sectional elevation of the discharging device.

Fig. 3 is a plan of the same.

Fig. 4 is a diagrammatic sectional plan illustrating means for varying the proportions in a mixture of fluids.

Figs. 5, 6, and 7 illustrate diagrammatically the means for varying the composition of a mixture of fluids.

Referring to Fig. 1, an apparatus of the character described comprises a plurality of fluid containers, A, B, C, D, connected to a discharging device F by means of ducts *a*, *b*, *c* etc.

As will be hereinafter explained the discharging device F is of such character that fluid may be drawn from any one or more of the containers, and various combinations of component fluids may be discharged in a mixture and of adjusted proportions. In dispensing beverages such as soda one of a variety of flavoring syrups, is blended with cream and charged water, and in use with oils, two or more brands or grades may be blended in similar manner. When two or more liquids are blended in this manner, it is usually the case that one liquid is a common ingredient of several mixtures, and when a change in composition is made, there is a tendency that a residue of the eliminated component will adhere to the walls of the particular duct adjacent to the discharge chamber. One feature of my invention is to connect the subordinate ducts to the chamber in such relation to the principal duct, that the liquid flowing therefrom to the discharge chamber, will operate to rinse any residue from the subordinate inlets. In connection with the elements and the adjustments thereof, which will be presently described the liquids from the several containers may be blended in close proportions and with only the components selected.

I have shown a preferred form of a device to accomplish objects described, but do not confine myself to the particular form shown, as variations may be made in the construction and operation thereof within the claims herein made.

Referring to Fig. 2 the body 10 is formed with a plurality of inlets 11^a, 11^b, 11^c, etc., connected with corresponding containers A, B, C, etc. Rotatable within the body 10 is a sleeve 12, and rotatable within this sleeve is a second sleeve 13. Additional sleeves may be used if required to amplify the variety of combinations and the number thereof in accordance with typical combinations hereinafter described.

Within the inner sleeve, and rotatable relative to the sleeves and the body, is a plug 14, provided with a stem 15, to which is secured the handle 16, the stem being journaled in the spider cover 17, secured to the body 10 by any suitable means. The plug is yieldingly pressed to bear within the inner sleeve, by the spring 18, which abuts a washer 19, bearing against the under side of the cover 17.

The hub of the cover is relieved at 20 and the pin 21, projecting from the stem 15, is adapted to engage either end of the relieved portion and limit the rotation of the plug 14. This plug is provided with the chamber 22, from which extend to the bearing surface, the ducts 23^a, 23^b, etc., corresponding in number with the inlets through the body, and so disposed that when the plug is rotated to one extreme of its rotation, the ducts will align rotatively with corresponding inlets in the body, 11^a, 11^b, etc. The sleeve 12 is provided with ports therethrough, 24^a, 24^b, etc., and the sleeve 13 with similar ports 25^a 25^b, etc., and both sleeves are independently rotatable by any suitable means, here shown by handles 26, 27. The position of the ports

in the sleeevs 12 and 13 are such that one or both sleeves may be rotated to align one or more ports with selected inlets in the body, or one sleeve may be utilized in connection with the other to adjust the volume of an entering fluid. In Fig. 4 I have shown diagrammatically, a cross section of Fig. 2 in which the sleeve 13 is operated as a selective element, permitting fluid to flow into the chamber 22 from the containers A, B, E through the corresponding ports. In this case the sleeve 12 may be rotated relative to both the body 10 and the sleeve 13, to govern the volume of fluid admitted to 23^b and 23^c, without affecting the volume admitted through the duct 23^a, which may be considered a principal admission duct and the others subordinate.

In Figs. 5, 6, 7 I have shown diagrammatic cross sections of Fig. 2 in which the arrangement of the ports in the sleeves is such that the number and different components of a mixture may be varied. Figs. 4 and 5 correspond in position with the setting shown in Fig. 2, and Figs. 6 and 7 to other combinations as follows:—In the adjustments shown in Figs. 4 and 5 fluids from containers A, B and E are admitted to the chamber 22 where they blend and are discharged from the orifice 22^a. Similarly in Fig. 6, fluids are admitted to the chamber from containers A and B only, and in Fig. 7 from containers A, B, and D. It is obvious that other combinations are possible by suitable arrangement of ports in the sleeves, and that an additional sleeve with suitable arrangement of ports and corresponding addition to the ducts in the body 10 and the plug 14, would permit an increased variety and number of combinations of fluids.

In all the drawings the plug 14 is shown in open position with a plurality of ducts aligned with corresponding inlets in the body 10. The particular rotative position of the sleeves governs the admission of the particular components to the chamber 22 when the plug is in open position, but the rotation of the plug independently of the sleeves may operate to prevent all flow to the chamber 22. If required the sleeves may be secured in any particular position by suitable means and I have shown one such means in which 28 is a ring, forked to engage a pin 29 projecting from the sleeve 13. The ring is slotted at 30, and a clamp screw 31 tapped into the body serves to bind the ring to the body and retain the ring in set position. A similar arrangement may be used in connection with the ring 12, or if this sleeve is used only to adjust the volume of admission of a particular fluid, as indicated in Fig. 4, a short clamping member 32, Fig. 3 may be used with the clamp screw 33 tapping into the ring 28. In this case the required movement of the sleeve 12 is only enough to close or open the particular port or ports in the sleeve 13. As hereinbefore stated, when it is required to mix liquids of the same general character, it is usually the case that one particular component is common to a number of mixtures, the other components varying and of lesser volume. In such cases, there is apt to be a residue of some component used in the previous mixture, which adheres to the particular duct and adjacent to the chamber 22. I therefor provide that the duct to the chamber for the common component be in relation to the ducts for other components such, that the passage of such common component through the chamber will operate to rinse the outlets thereto of the subordinate components. To facilitate such action, I relieve the walls of the subordinate ducts, adjacent to the main duct as at 34, and form the subordinate ducts to the chamber at an angle with the axis thereof, to minimize the tendency for any residue adhering or remaining in a particular duct after a change of combination is made.

From the foregoing description, it will be evident that by suitable arrangement of the ports in the sleeves relative to the inlets to the body, that a considerable variety of combinations of fluids may be made, or a single fluid may be admitted to and discharged from the discharging device. This latter feature is of special importance as the case may often arise where a single fluid would be required without combination with others. Additional facility for this object may be attained by extending a principal duct as shown in broken lines at 230 Fig. 4.

Having thus described my invention, I claim:—

1. In a dispensing apparatus, the combination of a pluralty of containers; dutes connecting the several containers with a single discharging device comprising a body; sleeves rotatable within the body; perforations therethrough adapted to align with the several ducts; means for rotating the sleeves to align respective perforations with a particular duct; means for securing both sleeves in such relation; a chambered plug rotatable within the sleeves, perforations therethrough adapted to permit the discharge of a selected fluid when the plug is rotated through a predetermined fixed arc.

2. In a dispensing apparatus, the combination of a plurality of containers; ducts connecting the several containers with a single discharging device comprising a body; sleeves rotatable within the body; perforations therethrough adapted to align with the several ducts; means for rotating the sleeves to align respective perforations with a plurality of selected ducts; means for securing both sleeves in such relation; a chambered plug rotatable within the sleeves; perforations therethrough adapted to permit the

discharge of the several selected fluids when the plug is rotated through a predetermined fixed arc.

3. In an apparatus of the character described in claim 2, means for adjusting the sleeves relative to one another to permit a variety of blended components to be discharged when the plug is rotated through a predetermined fixed arc; and means for securing the sleeves in adjusted relation to each other and to the body.

4. In a dispensing apparatus, the combination of a plurality of containers; ducts connecting the several containers with a single discharging device comprising a body; sleeves rotatable within the body; perforations therethrough adapted to align with the several ducts; means for rotating the sleeves to align respective perforations with a plurality of selected ducts; means for adjusting the sleeves relative to one another to permit a variety of blended components to be discharged when the plug is rotated through a predetermined fixed arc.

5. In a dispensing apparatus, the combination of a plurality of containers for a variety of fluids; ducts connecting the several containers with a single discharging device comprising a body, relatively rotatable sleeves within the body; ports through the sleeves suitably positioned to permit the alignment of a port or ports in one sleeve with ports in the other and with a selected duct or ducts in the body; a plug rotatable within the inner sleeve and provided with a discharge chamber; ducts therein corresponding in number with the ducts in the body, and adapted to be moved into alignment therewith independently of the sleeves; means for moving the sleeves independently of one another to align a port or ports in each sleeve with selected ducts in the body, for the purpose of governing the passage of a fluid or fluids therethrough to the discharge chamber; means for retaining each sleeve in adjusted position relative to each other and to the body, and independent means for moving the plug into position in which the selected fluid or fluids may pass into the discharge chamber and escape therefrom.

HARRY A. NIVEN.