

Oct. 14, 1969

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3,472,423

MEANS FOR DISPENSING SEPARATELY STORED SUBSTANCES

Filed Oct. 13, 1967

3 Sheets-Sheet 1

FIG. 1a.

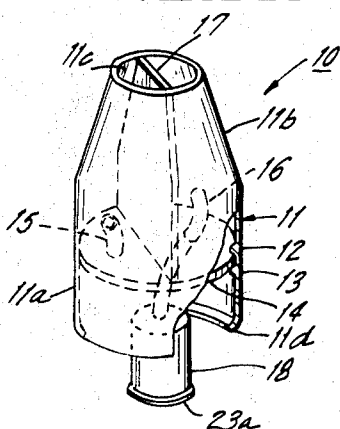


FIG. 2a.

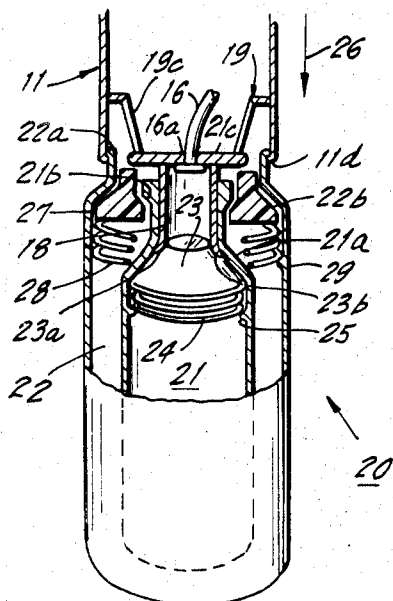
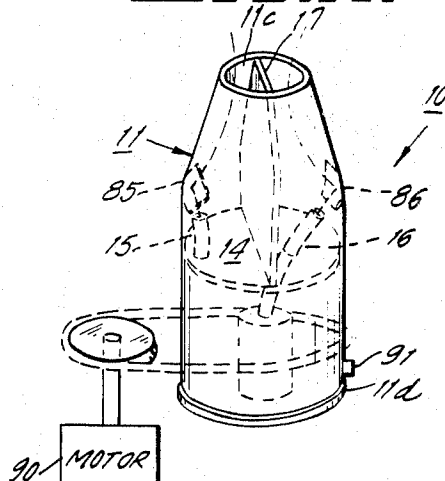


FIG. 1b.

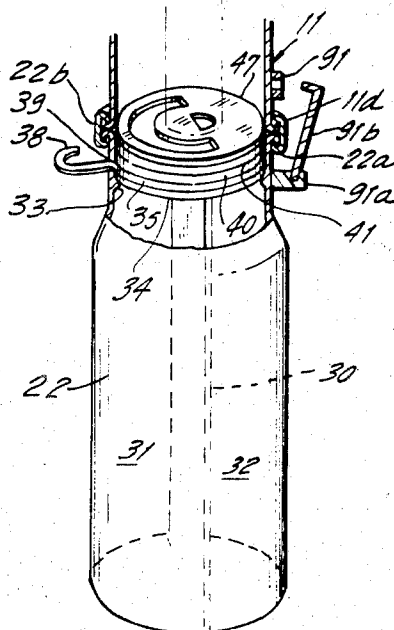


FIG. 2b.

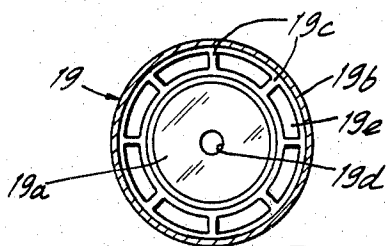


FIG. 1c.

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FIG. 2a.

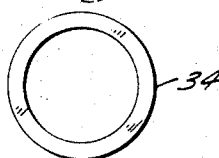
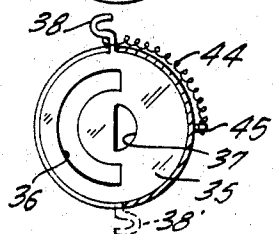
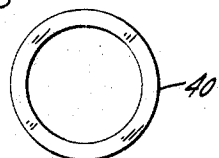
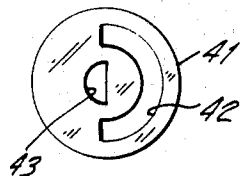
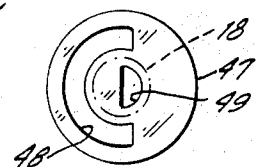


FIG. 3a.

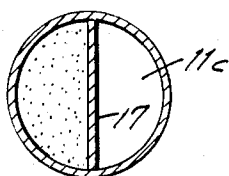


FIG. 3b.

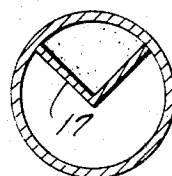


FIG. 3c.

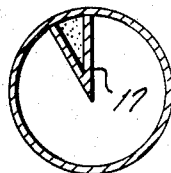


FIG. 3d.

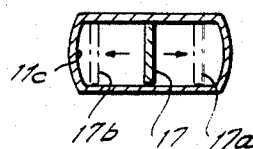


FIG. 4a.

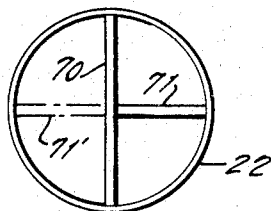


FIG. 4b.

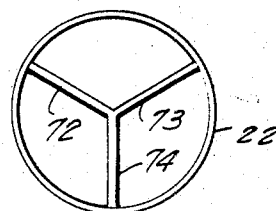


FIG. 4c.

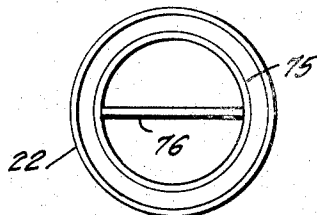


FIG. 4d.

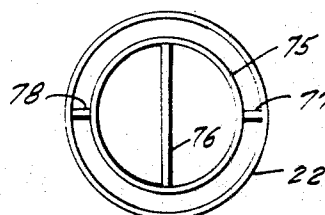


FIG. 5.

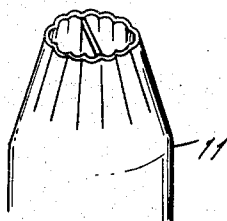
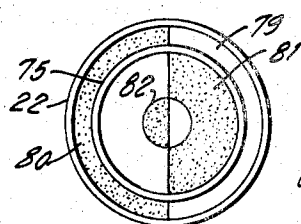


FIG. 4e.



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FIG. 8.

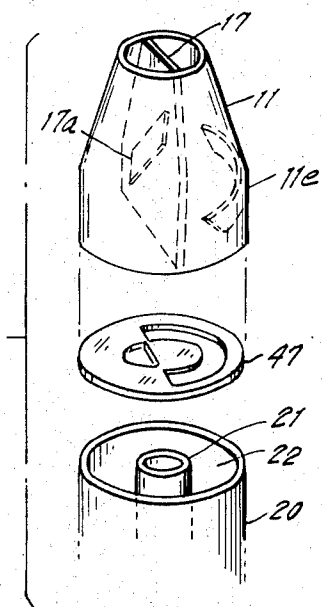


FIG. 9.

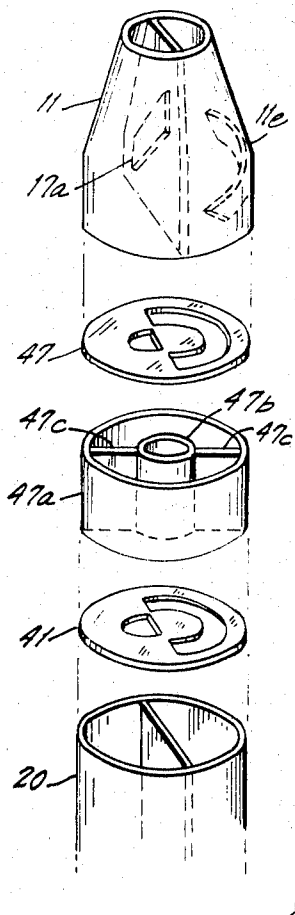


FIG. 6.

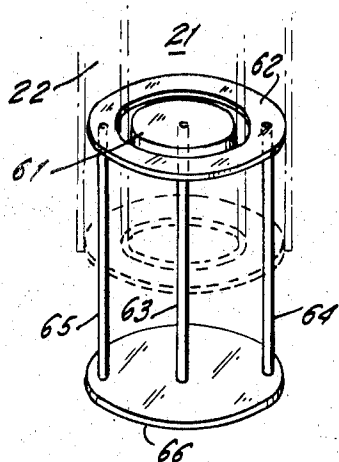


FIG. 7a.



FIG. 7b.



FIG. 7c.



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MEANS FOR DISPENSING SEPARATELY STORED SUBSTANCES

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Filed Oct. 13, 1967, Ser. No. 675,084

Int. Cl. B67d 5/56

U.S. Cl. 222—129

17 Claims

ABSTRACT OF THE DISCLOSURE

This invention broadly discloses a means for simultaneously dispensing two or more separately stored substances either by admixing the substances or intertwining the substances in such a manner as to respectively provide a homogenous mixture or an intertwined arrangement.

The substances are stored in separate containers or compartments and may either be maintained pressurized or provided in collapsible compartments such as of the type of the compressible toothpaste tube structure which is manually collapsible for ejecting the paste or other substance contained therein. The substance which is forced out of each individual compartment either manually or under the control of a pressurized gas is caused to pass through an associated tube which is bent or otherwise formed at an angle to cause the entire nozzle to rotate as the substances are ejected. In the case where the substances are of the form of a paste or in a semi-solid state the substances ejected from the nozzle can be intertwined with one another to form a helical-shaped arrangement which has an interesting, decorative, and aesthetically appealing appearance.

In the case where the substances are to be substantially homogeneously admixed the interior tubes may be replaced by one or more exit openings all of which enter into a common chamber wherein the substances are thoroughly admixed prior to exiting through the nozzle opening.

The instant invention relates to dispensing containers and more particularly to a compartmentalized dispensing container capable of dispensing substances each independently stored within one of the container compartments in such a manner as to homogeneously admix the independently stored substances before final dispensing thereof or alternatively for intertwining the substances to be dispensed to provide a flow from the dispenser having an aesthetically appealing appearance.

There exists a variety of applications wherein it is desirable to admix a plurality of substances either in a homogeneous fashion or in an intertwining fashion.

As an example of the former arrangement, it may be desired to substantially homogeneously admix two substances which are normally mixed only prior to their actual use. As an example of the latter situation, it may be desired to intertwine two comestible pastes or semi-solid substances such as whipped creams, frostings, icings, glazes, puddings, pie fillings, ice creams, custards, cheese dips, cheese spreads, hors d'oeuvres, peanut butter and jellies, cream cheese and jelly spreads in combination, aerosol cookie and cake batters and dough, pancake batters, shaving creams, and the like or two dentifrices which substances are of contrasting colors and/or flavors so as to form a resulting aesthetically appealing intertwined flow.

Other possible uses of the instant invention include application of epoxy glues, paints or various chemical reactants or vitamin additives which have to be mixed with

another additive only immediately prior to dispensing.

The dispenser of the instant invention, in one preferred embodiment, is comprised of a first and second storage container each of which is filled with a paste-like substance, which substances may be of contrasting colors. The substances may be maintained under pressure within their separate containers or the containers may be collapsible so as to cause ejection of the substances contained therein brought about by a contraction or collapsing of the container walls. Another alternative could be the use of a plunger to cause ejection of the stored substances in the containers. Each storage container is provided with an opening at one end thereof.

A pair of tubes is provided for communicating with the container openings for ejecting the substances contained therein. In the case where the substances are maintained in a pressurized state within their respective containers, suitable valves are provided for sealing the container openings when the dispenser is not in use, and being movable to permit egress of the substances through the tubes.

Each of the tubes passes through and is supported in a disc-like member which is rigidly supported within a nozzle housing which is rotatable relative to the storage containers. The distal ends of the tube are separated by a barrier which divides the upper interior portion of the rotatable nozzle housing into two areas. Each interior area of the nozzle housing carries an angularly oriented baffle plate which is located opposite the distal end of each respective interior tube such that the substances ejected from the tubes deflect off the baffle plates, thereby causing the entire nozzle to rotate to effectuate the intertwined or barberpole effect at the open end of the nozzle. If the substances are to be substantially homogeneously admixed, the barrier which divides the upper interior of the housing into the two aforementioned areas may be removed.

As a particularly advantageous feature of the instant invention, the storage containers may be of a multiplicity of types and may, for example, comprise a plurality of concentric storage containers, or alternatively, may be comprised of a single housing provided with a partition dividing the housing into at least two distinct storage compartments. With a container of the last-mentioned type, comprising a single compartment divided by an interior partition, a slotted disc assembly seals the opening and is provided with cooperating semicircular-shaped openings communicating with the storage compartments located on the opposite sides of the partition. As will be explained in greater detail, the novel slotted disc assembly is useful for adapting many different types of storage containers with various types of nozzle housings constructed in accordance with the instant invention and is also primarily useful for guaranteeing a continuous flow of substances whenever the nozzle of the instant invention is in operation.

In an alternative embodiment of the instant invention, the construction is substantially the same as set out above. However, in this embodiment, the disc-like member which supports the interior tubes is rotatable together with the tubes, relative to the exterior nozzle housing. Furthermore, the interior tubes are bent or otherwise formed at their distal ends in opposite directions so as to generate additive thrust which cause the rotation of both the tube and the disc within the nozzle housing. With the use of a barrier plate separating the tubes, the intertwined or barberpole effect is possible at the output of the nozzle. Without the barrier, plural substances will be first mixed within the nozzle housing before being emitted.

It is therefore one object of the instant invention to provide a unique rotatable nozzle for intertwining a plurality of substances stored in compartmentalized sections of a dispenser.

Another object of the instant invention is to provide a novel dispensing mechanism for admixing or intertwining a plurality of substances provided within compartmentalized sections of a storage dispenser and including rotatable disc means having interior tubes for each of the substances which are so arranged to cause rotation thereof as the substances are being ejected.

These and other objects of the instant invention will become apparent when reading the accompanying description and drawings in which:

FIGURE 1a is a perspective view showing a nozzle arrangement designed in accordance with the principles of the instant invention;

FIGURE 1b is an elevational view, partially sectionalized, showing a storage container which may be employed with the nozzle of FIGURE 1a;

FIGURE 1c is a top view of the valve actuating mechanism used in the container of FIGURE 1b;

FIGURE 2a is a perspective view showing a rotatable nozzle of the instant invention;

FIGURE 2b is a cross-sectional view showing a container which may be used with the nozzle assembly of FIGURE 2a;

FIGURE 2c is a take-apart view showing a disc assembly employed in the dispenser assembly comprised of the nozzle assembly of FIGURE 2a and the container of FIGURE 2b;

FIGURES 3a-3d show different configurations for the nozzle opening;

FIGURES 4a-4d are top views of containers which may be used having different numbers of compartments;

FIGURE 4e is a modification of the disc of FIGURE 2c so as to be used with a container having three compartments;

FIGURE 5 shows a nozzle with a scalloped configuration;

FIGURE 6 shows a piston arrangement which may be used with the container of FIGURE 1b;

FIGURE 7a shows the intertwining substances as they appear from the nozzle of FIGURE 2a;

FIGURE 7b shows intertwined substances similar to those shown in FIGURE 7a but illustrates the type of intertwining effect achieved when the substances are emitted slower from the nozzle of FIGURE 2a than the effect illustrated in FIGURE 7a;

FIGURE 7c illustrates the nozzle of FIGURE 2a when such nozzle is prevented from rotating while substances are being emitted therefrom;

FIGURE 8 is a perspective view of another embodiment of the instant invention showing the nozzle, adapter and container; and

FIGURE 9 is a modification of the embodiment of FIGURE 8.

Referring now to the drawings, FIGURE 1a shows a nozzle assembly 10 which may be used for dispensing a plurality of substances and which is comprised of a nozzle member 11, the lower portion of which, 11a, is substantially cylindrical and the upper portion of which, 11b, is substantially conical in shape. The hollow interior is provided with a pair of annular projections 12 and 13 which receive a cylindrical shaped disc 14 which is free to rotate relative to the nozzle member 11. The annular shaped projections 12 and 13 may be formed by depressing or otherwise bending the nozzle member 11 after positioning of the disc 14 therein. The disc 14 is provided with a pair of openings each fitted with a tubular member 15 and 16, respectively, which members communicate with the stored substances to be mixed, in a manner to be more fully described. Each of the interior tubular members 15 and 16 is curved or otherwise bent and is arranged to eject a substance against the interior surface

of the nozzle 11 at which point it will be deflected and passed through the opening 11c to be dispensed. As shown in FIGURE 1a, the tubular members 15 and 16 are bent in opposite directions relative to the center line of the nozzle 11 such that additive thrusts are developed at the ends of the tubes 15 and 16 when substances are being ejected; thereby, and as will be further explained, causing the disc 14 and the tubes 15 and 16 to rotate within nozzle 11. The interior region defined by the disc 14 of the nozzle 11 is compartmentalized by means of a barrier plate 17 which maintains the substances separated from one another until the time at which they are emitted from opening 11c. In certain applications the barrier plate 17 may be omitted to provide an operation to be more fully described.

The tube 15 is secured at its lower end to an appropriate opening provided in disc 14. The tube 16 passes through an associated opening in disc 14 and enters into the top opening provided in a closed top cylinder 18 which is secured to the inner wall of mixing nozzle 11 by means of the dish-shaped plate 19. It will be appreciated that if desired the entire tube 15 and the upper portion of tube 16 may be eliminated such that when viewed from the top, disc 14 would appear to include only two apertures. However, in this type of arrangement, the interior walls of such apertures are angled in opposite directions to achieve the same additive thrust effect when substances are being emitted as would be achieved with the structure shown in FIGURE 1a.

Returning to FIGURES 1a-1c, the dish-shaped plate 19, as shown best in FIGURES 1b and 1c, is comprised of a central portion 19a which may, for example, be the top of cylinder 18 and an outer rim 19b which is joined with the center disc 19a by means of the diagonally aligned struts 19c arranged at spaced intervals between rim 19b and disc 19a. The disc 19a is provided with an opening 19d for receiving the lower end of tube 16. As best shown in FIGURE 1b, the lower end of the tubular member 16 is flared outwardly at 16a so as to be retained in the position shown in FIGURE 1b but is not rigidly secured to the closed top cylinder 18 and in fact is free to rotate.

The nozzle assembly 10 is adaptable for use with a container 20, shown best in FIGURE 1b, which is comprised of an inner substantially cylindrical container 21 and a concentrically arranged outer container 22. Each of the containers 21 and 22 contain substances which are maintained under pressure therein for subsequent ejection by means of the nozzle assembly. The substances may, for example, be dessert toppings of contrasting colors and flavors, dentifrices, pastes, or any other such substances capable of being dispensed by means of a pressurized container typically referred to as an aerosol dispenser.

The outer container 22 is provided with an outwardly directed flange 22a which cooperates with an inwardly directed flange 11d provided on the nozzle member 11. The two flanges 22a and 11d cooperate to limit the vertical motion of the nozzle assembly 11 relative to container 20.

Since the substances within containers 21 and 22 are maintained in a pressurized state, each of the containers is provided with valve means for sealing the containers when the dispenser is not in use. The inner container 21 has a narrow neck portion 21a which is fitted with a valve member 23 having sloping walls to cooperate with the neck portion of the inner container for sealing the container opening. The valve means 23 is provided with notches 23a and 23b for receiving and seating the lower edge of the closed top cylinder 18. The valve means 23 is maintained in position by means of a helical spring 24 whose upper end bears against the under surface of valve member 23 and whose lower end is seated against an annular shaped projection 25 surrounding a portion of the inner wall of container 21. The spring means normally

urges the valve member 23 upwardly to seal the opening therein. Valve member 23 may be opened by moving nozzle member 11 vertically downward as shown by arrow 26. This movement is imparted through member 19 to cylinder 18 which is rigidly secured thereto driving it downwardly so as to cause the valve member 23 to provide a passageway around the neck portion of container 21 and between its inner surface and the outer surface of valve member 23 so as to pass upwardly into cylinder 18 and tube 16 to enter into its associated compartment.

The outer container 22 is likewise provided with a narrow neck portion 22b which acts to seat a ring-shaped valve member 27 having sloping inner and outer walls to fit the narrow neck portion 22b of container 22 and to sealingly fit the widening neck portion 21b of inner container 21. Valve member 27 is firmly seated in the sealed position by means of a helical spring 28 whose upper portion bears against the under surface of annular shaped valve member 27 and whose lower end is seated and supported by an inwardly directed circular shaped projection 29 provided along the inner wall of outer container 22. As can clearly be seen the valve member 27 has an upper portion thereof extending above the upper edge 21c of inner container 21. The downward vertical movement of the nozzle assembly 11 causes the cylindrical disc 19a to press downwardly upon the valve member 27 to unseat the opening allowing the substance contained therein to pass between the confronting surfaces of the valve member 27 and the inner wall of outer container 22 and the outer wall of inner container 21. The substance will then pass through the openings 19e between supporting struts 19c of the supporting member 19 shown in FIGURE 1c, and will enter through the opening in disc 14 to pass out through tube 15.

It is possible to actuate the valves in the embodiment of FIGURE 1b without the necessity of moving the entire nozzle assembly 11. This may be done, for instance, by securing a lever arm to plate 19 and extending it through a slot in nozzle 11 to permit the movement of plate 19 by operation of the lever arm. In addition, it is possible to provide notches in the slot to permit selective displacement of the lever arm and plate 19 to control the speed of the ejected fluids. It is noted that the slot would require a back plate to prevent the fluids from escaping through it.

In the case where the substances within containers 21 and 22 are maintained under pressure, the ejection of these substances through tubes 15 and 16 cause the disc 14 (and the tubes) to rotate. The barrier plate 17 has its lower end secured to disc 14 and will likewise rotate therewith. The substances will thereby rotate as they leave opening 11c and become intertwined with one another. In the case where the substances are whipped cream materials of contrasting colors they will exit in an intertwined fashion, as shown in FIGURE 7a, providing an aesthetically appealing helical pattern of contrasting colors and flavors which may be used as a dessert or cake topping, for example. FIGURE 7b illustrates the intertwining effect which would be achieved with a slower speed of ejection of the substances. The slower speed can be regulated by the extent to which the nozzle 11 is depressed or, as noted previously, by means of variable length slots cooperating with a lever arm attached to the dish 19.

The embodiment of FIGURES 1a-1c may be modified by forming the container of a soft plastic or metallic material of the type normally employed for containing and dispensing pasty substances such as dental substances, food or dessert toppings, or any other similar substances. The conventional toothpaste tube is one exemplary embodiment of such a dispenser. The inner and outer containers 21 and 22, shown in FIGURE 1b, may be formed of such materials such as pliable plastic or metal with the bottom portions of the container normally co-linear to one another and bent over one upon the other to form

a folding seal along their lower edges. Dispensing of the substances contained therein is brought about by compressing the tube, usually at a point near the bottom thereof, causing the materials contained therein to be forced upwardly through the interior tubes 15 and 16 at a point where they are ejected into the chamber of the nozzle 11. In such arrangements the substances need not be maintained under pressure thereby eliminating the need for the valve structures shown in FIGURE 1b and requiring only that the interior tubes 15 and 16 be rotatably secured to suitable openings provided in each of the containers for receiving and ejecting the substances with which they are associated. Ejection of the substances occurs as was previously described wherein the ejection, as a result of the orientation of interior tubes 15 and 16, causes rotation of the disc 14 and tubes 15 and 16 causing the emitting substances to be intertwined in a decorative helical pattern.

Using the same principle as in compressing the containers, the containers may be made with plungers or pistons at their lower ends whereby pushing the pistons up forces the contents of the containers through their respective interior tubes. A pair of pistons capable of being used with the containers of FIGURE 1B is shown in FIGURE 6.

The pistons of FIGURE 6 include a pair of concentric plates 61 and 62 which fit into the inner and outer chambers, respectively, of the container of FIGURE 1b. The two plates are separated by a distance so as to permit the wall of the inner chamber to fit between the plates. The pistons include rods 63, 64 and 65 connected to the plates 61 and 62 and connected to another plate 66. By applying pressure to the plate 66, the rods force plates 61 and 62 up into the chambers and the contents of the chambers are expelled. The container in FIGURE 6 is shown in phantom.

The nozzle of FIGURE 1a and the nozzle of FIGURE 2a, as will be shown below, may also be provided without the center barrier 17. By removing the center barrier, the substances from each of the two containers will be mixed homogeneously immediately before dispensing the mixture.

FIGURES 2a-2c show the preferred embodiment of the instant invention which most advantageously presents the inventive concept involved wherein a rotatable nozzle structure 10 of FIGURE 2a is substantially similar to that shown in FIGURE 1a. Since there is a rather striking similarity as between the design of the two nozzles, only the distinctions of the nozzle of assembly of FIGURE 2a will be referred to herein. In this embodiment disc 14 is rigidly secured within nozzle 11 while the entire nozzle assembly 10 (including the nozzle 11, disc 14 and tubes 15 and 16) is free to rotate, in a manner to be further described, relative to the container 22 as the substances are emitted therefrom.

To achieve this rotation, two baffle plates 85 and 86 are secured on the interior of the nozzle 11 and angularly oriented relative to the ends of tubes 15 and 16 such that substances emitted therefrom will hit and deflect the plates to cause the rotation of the entire nozzle assembly 10, with the rotation of the nozzle creating the intertwined effect of FIGURE 7 at the output 11c.

It may be further appreciated that rather than using separate baffle plates such as 85 and 86 secured to the inside of the nozzle, it is possible to preform the interior surfaces of the nozzle 11 with angularly oriented, concave runways which when struck by the fluids would cause the nozzle to rotate.

The following is a description of the particular container and valve assembly of FIGURE 2b which can be used with the novel rotating nozzle assembly 10 of FIGURE 2a. However, it is to be understood that a variety

of containers and valve assemblies, such as that illustrated in FIGURE 1b and many more, may be used with the rotating nozzle of FIGURE 2a.

The lower end of nozzle member 11 is provided with an outwardly and upwardly directed flange 11d which cooperates with a similar aligned flange 22a provided along the upper edge of container 22. The container 22 is provided with either a rigid or a flexible partition 30 dividing the interior into two separate storage compartments 31 and 32, respectively. The narrow neck portion 22b of container 22 is provided with an inwardly directed flange 33 for positioning and supporting a ring-shaped washer 34. Positioned above the ring-shaped washer 34 is a valve member 35 which is a substantially circular shaped disc having an arcuate shaped slot 36 and a semicircular shaped aperture 37. A substantially U-shaped projection 38 is affixed along the edge of disc 35 and projects through a semicircular slot 39 provided around container 22. A second ring-shaped washer 40, to be described in greater detail, is positioned above disc member 35. The two ring-shaped washer members permit the disc member 35 to be rotated about its center by manually gripping projection 38. The sealing rings 34 and 40 prevent any egress of the pressurized contents of compartments 31 and 32 from being emitted in the slot provided half-way around the container 22.

A second disc member 41 having an arcuate shaped slot 42 and a semicircular shaped aperture 43 is positioned upon ring-shaped washer 40 and is secured to the interior wall of the container 22 so as to remain in a stationary position.

A biasing spring 44 is secured to the exterior of container 22 at point 45 and its opposite end is secured to projection 38 so as to bias disc member 35 in the clockwise direction relative to the representation shown in FIGURE 2c. Further clockwise movement of projection 38 is limited by the first end of the narrow opening 39 provided in container 22. As can clearly be seen in the exploded view shown in FIGURE 2c, with the discs 35 and 41 in the positions as shown, the arcuate shaped slot 42 is sealed by the solid portion of disc 35. In a like manner, the semicircular opening 43 is sealed by the remaining solid portion of disc 35. By gripping projection 38 and rotating it counterclockwise to the dotted line position 38', arcuate shaped slots 36 and 42 and semicircular shaped apertures 37 and 43 are moved substantially in alignment with one another to permit the passage of the pressurized substances therethrough. Obviously, release of the projection 38 places the disc 37 under control of the charged spring 44 causing it to return projection 38 to the solid line position so as to again seal the contents in compartments 31 and 32.

The nozzle member 11, which is shown in FIGURE 2b, is rotatably joined to container 22 by means of a ring-shaped fitting 22b which, while preventing linear movement of the container 22 relative to the nozzle 11, permits relative rotational movement therebetween. When the valve disc 35 is rotated in the manner previously described to release the pressurized contents, the substances will be emitted from compartment 31 through aligned openings 37-43 and will be emitted from compartment 32 through the aligned openings 36, 42. The substances will then pass through a final disc 47 having openings 48 and 49 of configurations substantially similar to the openings 43-47 and 42-46, respectively. Disc 47, which is rigidly secured to the interior wall of nozzle member 11, has rigidly mounted thereon a small cylinder 18 which completely surrounds opening 49 in disc 47 serving as a barrier between substances passing through arcuate shaped slot 48 and through semicircular shaped aperture 49. Tube 16 is free to rotate relative to cylinder 18 (in the manner previously described with respect to FIGURE 1b) and is positioned so as to emit substances passing through cylinder 18 into the chamber defined by the inner surface

of the conical portion of nozzle 11 while tube 15 ejects the substance passing through arcuate shaped opening 48 and around cylinder 18. The substances then strike the angled baffle plates 85 and 86 such as to cause rotation of the entire nozzle assembly 10 of FIGURE 2a as the substances are emitted causing the intertwining effect of FIGURE 7a.

The disc 47 serves to assure the fact that the substances will remain separate from one another until their final ejection from the upper opening 11c. As will be apparent, the degree to which the disc 35 is rotated will determine the amount of and speed of flow of the emitted substances. Consequently different patterns, like the one of FIGURE 7b, can be achieved.

The resultant product emitted from the dispenser will be substantially similar to that described with reference to FIGURES 1a-1c in that the substances will be intertwined when the barrier wall 17 is used. Alternatively, the substances will be admixed in the interior region of the nozzle member 11 if the barrier member 17 is omitted.

The dispenser of FIGURES 2a and 2b can be further provided with a latch consisting of catch 91, tab 91a, and latch arm 91b. The latch arm 91b is pivotally connected to the tab 91a by suitable means and can be inserted in catch 91 to prevent the rotation of nozzle 11. By stopping the rotation of the nozzle 11, the resulting product will be striped rather than intertwined; see FIGURE 7c.

While the nozzle of FIGURES 1a and 2a has been described as having initial means for causing its rotation, it is possible to eliminate the internal means and provide an external rotating means in its place for large commercial applications, such as in a bakery or a custard vat. This external means may be an electric motor as shown in phantom in FIGURE 2a. This motor may be controlled by projection 38 of the valve mechanism which may actuate a switch for the motor.

If the intertwined materials are to be dispensed in unequal amounts to provide varying effects, it is possible to shape and position the barrier plate 17 in a variety of different ways, some of which are shown in FIGURES 3a-3d. Shown in FIGURE 3a, the barrier plate divides the opening 11c into equal halves allowing substantially equal flows to be emitted therefrom. If it is desired to regulate the flows somewhat or to modify their configurations, the barrier plate 17 may be bent in a V-shaped manner as shown in FIGURE 3b. As shown in FIGURE 3c, the barrier plate 17 may be bent more severely in the V-shaped manner to yield a still more disproportionate ratio between the emitted substances. As shown in FIGURE 3d, opening 11c may have a substantially oval-shaped configuration so as to allow the barrier plate 17 to be moved from, for example, a centrally located position (for even flows) to either the left or right-hand extreme ends to occupy the positions 17a or 17b, for example, allowing the user to preadjust the desired flow. It will be appreciated, however, that all the embodiments of FIGURE 3 will also produce the intertwined effect as the nozzle assembly 10 is rotated.

In cases where it may be desired to admix more than two substances from a single dispenser assembly, any of the container arrangements shown in FIGURES 4a-4d may be employed. As shown in FIGURE 4a, the container 22 may be provided with partitions 70 and 71 to provide three separate compartments. In a like manner, the partitions 71 may be extended as shown at 71' to provide four separate compartments. The container 22 of FIGURE 4b may be provided with the partitions 72-74 to provide three separate compartments of substantially equal volume. As shown in FIGURE 4c, a three compartment container assembly is comprised of an inner container 75 having a partition 76, an outer container 22 concentric with the inner container provides a third compartment for storing a substance either under pressure or in a squeeze tube arrangement as was previously described. The embodiment of FIGURE 4c may be slight-

ly modified in the manner shown in FIGURE 4d wherein the outer container 22 is provided with partitions 77 and 78 to divide the region defined by container 22 and container 75 into two compartments of substantially equal volume. Container 75 is provided with partition 76 for dividing container 75 into two compartments of substantially equal volume.

In the case where three compartments are provided in the arrangement of FIGURE 4c to be employed with the disc assemblies of FIGURE 2c, the discs may be modified in the manner shown in FIGURE 4e so as to be provided with two arcuate slots 80 and 81 in disc 79 and a semicircular aperture 82 each of which is designed to cooperate with the three compartments provided in the embodiment of FIGURE 4c. Similar disc arrangements may be provided to be employed with the other compartmentalized container arrangements of FIGURES 4a, 4b and 4d. As shown in FIGURE 5 the rotatable nozzle assembly 11' may be provided with a plurality of grooves 11e' to provide a substantially scalloped configuration for altering the shape of the emitting substances to further enhance its decorative value. This nozzle, as well as nozzles of other configurations, may be made removable and interchangeable with other nozzles to permit more aesthetic effects by varying the external surface of the intertwined stripes.

While it has not been shown, a cap may be used to close off the top of the nozzle for sanitary reasons. This cap, however, is not necessary to prevent the substances in the container from coming out since adequate sealing means is provided by the valves.

As shown in the embodiment of FIGURE 1a, the rotating interior tubes 15 and 16 and disc 14 are designed to be concealed within the exterior nozzle 11. In the preferred embodiment of the invention, the nozzle assembly of FIGURE 2a, the entire nozzle assembly 10 is exposed and may be seen to rotate as the invention is used. However, if desired, an exterior concentric, stationary housing may be secured to the container 22 so as to conceal the rotating nozzle.

The embodiments of FIGURES 8 and 9 accomplish the same results as the embodiments of FIGURES 1a and 2a without the necessity of a lower chamber in the rotatable nozzle itself. Since FIGURES 8 and 9 are very similar to FIGURES 1a and 2a which have been described, only the distinguishing features of the embodiments of FIGURES 8 and 9 will be given. Corresponding elements of the figures will be correspondingly numbered.

Referring to a somewhat schematic FIGURE 8, a rotatable nozzle 11 is provided with a barrier 17 defining two compartments in the nozzle for separating the fluids. The nozzle 11 is provided with a baffle or convoluted blade 11e on its interior surface in one compartment and with a baffle or blade 17a on the barrier 17 in the second compartment of the nozzle. The blades are oriented so that passage of fluids through the nozzle 11 from compartments 21 and 22 tends to rotate the nozzle 11. The nozzle 11 may be rotatably mounted to the container 20 as shown in FIGURE 2b. The nozzle 11 further includes a disc 47 rigidly mounted to it to direct the fluids into the proper compartments as described in connection with FIGURE 2.

In FIGURES 8 and 9, the container 20 may be a collapsible tube or it may be provided with a piston gun. If an aerosol is used, a valve may be provided near the top of container 20.

FIGURE 9 is similar to the embodiment of FIGURE 8. In this embodiment, a pair of intermediate concentric cylinders 47a and 47b and a disc 41 are provided to adapt the nozzle 11 to a container having compartments as shown. In this embodiment the disc 41 is rigidly connected to container 22 and the disc 47 is rigidly connected to nozzle 11. The cylinders 47a and 47b form one unit joined by struts 47c which unit is secured on disc 41. The end

of cylinder 47a which is not rigidly connected to disc 41 is rotatably mounted to nozzle 11 in the same manner as shown in FIGURE 2b to permit rotation of the nozzle 11 as the substances are ejected.

It will be further appreciated that the volumes defined within the concentric cylinders 47a and 47b further function as intermediate storage areas between the storage container 22 and nozzle 11 so as to assure a continuous flow of substances at all times that the invention is in use. Such intermediate storage means can be used not only with the embodiments of FIGURES 8 and 9, but also with the embodiment of FIGURES 1a and 2a, as well as with many other containers which could be used in the practice of the instant invention.

It can be seen from the foregoing that the instant invention provides a novel dispenser assembly for dispensing dissimilar substances or substances of contrasting colors and flavors so as to create an aesthetically appealing emission for dessert toppings and the like, or, alternatively, so as to produce a substantially homogeneous mixture of two or more substances either of which results are produced by means of a rotating emitting nozzle assembly which is caused to revolve as a result of the emission of the substances contained within associated storage containers arranged within the dispenser assembly.

Some further advantages of the instant invention are, it is inexpensive and simple to manufacture. It can be used with different consistencies of material, relatively clog-free and non-smearing. The nozzles may have different shaped heads which may be placed on consumer items individually or may be sold in sets directly to the consumer for use on a variety of containers.

Although there has been described a preferred embodiment of this novel invention, many variations and modifications will now be apparent to those skilled in the art. For instance, the particular valve structures shown may be modified and replaced by many suitable valve structures well known in the prior art. Similarly, the nozzle assembly 10 of FIGURE 2a can be used with the storage container of FIGURE 1b, and vice versa. Furthermore, the compartmentalized containers shown may be replaced by many other types of containers with different arrangements of the compartments, such as containers having compartments defined by horizontal partitions rather than vertical, as shown. It will also be obvious that numerous means for ejecting the fluids may be used such as aerosol cans, collapsible tubes, and piston guns. In addition, the nozzle may be used with either disposable or refillable storage compartment containers. Furthermore, it will be appreciated that the basic concept of rotating the nozzle may be achieved by means other than those disclosed in the above description. For instance, one can completely eliminate the need for baffle means of any type, in the embodiment of FIGURE 2a, by simply directing the ends of tubes 15 and 16 in opposite directions to achieve the thrust discussed with respect to FIGURE 1a. Alternatively, the ends of tubes 15 and 16 might be directed to strike the opposite side of the barrier 17 at points off the center line of the barrier so as to spin the nozzle. Alternatively, the nozzle walls themselves, in the embodiment of FIGURES 2a, 8, and 9 might be so shaped to cause rotation of the nozzle when struck by the emitted substances.

The embodiments of the invention in which an exclusive privilege or property is claimed are defined as follows:

1. Means for dispensing a plurality of substances to substantially form a single intertwined stream emitted from the outlet port comprising:

a storage container having at least first and second compartments therein;

nozzle means rotatably secured to said storage container, said nozzle means including first and second dispensing regions rotatable with said nozzle means;

means for effecting rotation of said nozzle means dur-

ing the dispensing of substances from said storage container; and

flow distributing means interposed between said storage container and said nozzle means for continuously distributing substances flowing out of the first and second compartments of said storage container into an associated one of the dispensing areas of said nozzle means while said nozzle means is rotating.

2. The dispensing means of claim 1, wherein the first and second compartments of said storage container include first and second openings, respectively, through which substances stored in said compartments may flow; and said flow distributing means includes:

barrier means secured to the interior of said nozzle means to define said first and second dispensing regions on opposite sides of said barrier means; and first and second flow paths communicating with said first and second openings, and said first and second dispensing areas, respectively, for directing substances in said first and second compartments to said first and second dispensing regions.

3. The dispensing means of claim 2, wherein said first flow path includes first conduit means rotatably communicating with said first opening at one end thereof; said first dispensing area including surface means oriented in a predetermined relationship with respect to a second end of said first conduit means so as to effectuate rotation of said nozzle means when said surface means is struck by substances emitted from the second end of said conduit means; said first conduit means and said surface means cooperating to define said means for effecting rotation of said nozzle.

4. The dispensing means of claim 3, and further including:

intermediate container means interposed between said first opening and said first conduit means, a first end of said intermediate container means communicating with said first opening, a second end of said intermediate container means having an aperture therein;

support means secured on the interior of said nozzle means;

said first end of said conduit means rotatably communicating with said aperture in said intermediate container means;

said surface means of said first dispensing area comprising baffle means secured therein;

said second end of said first conduit means passing through and being supported by said support means and being directed at said baffle means.

5. The dispensing means of claim 4, wherein said second flow path includes:

the internal volume defined by said support means and storage container at first and second ends, respectively, and between said intermediate container means and the interior surface of said nozzle means along its sides; and

a second conduit means secured in an opening of said support means at one end thereof and directed at baffle means of said second dispensing area at its other end thereof.

6. The dispensing means of claim 4, and further including valve means interposed between said first and second compartments and said first and second dispensing regions for selectively dispensing the flow of substances from said first and second compartments.

7. The dispensing means of claim 2, wherein said first and second openings are in side-by-side relationship, and said flow distributing means includes conversion means for changing a side-by-side flow of substances emitted from said first and second openings into a concentric flow of the same substances.

8. The dispensing means of claim 7, wherein said conversion means includes at least one plate having a substantially semicircular shaped aperture communicat-

ing with said first opening, and a substantially semicircular shaped annular slot communicating with said second opening.

9. The dispensing means of claim 1, wherein said nozzle means includes barrier means therein defining said first and second dispensing regions; and the means for effecting rotation of said nozzle means includes predetermined surface means located in at least one of said first and second dispensing regions and positioned so as to effect rotation of said nozzle means when struck by a substance flowing through said one of said first and second dispensing areas.

10. The dispensing means of claim 9, wherein said surface means of said one of said dispensing areas comprises a baffle plate secured on the one side of said barrier means, and further including a second baffle plate in the other of said dispensing regions secured on the interior surface of said nozzle means.

11. The dispensing means of claim 9, wherein said flow distributing means includes at least one plate secured to said nozzle and rotatable therewith, said plate having a substantially semicircular shaped aperture communicating with said first dispensing region and one of said first and second compartments, and a substantially semicircular shaped annular slot communicating with said second dispensing area and the other of said first and second compartments.

12. The dispensing means of claim 11, wherein the first and second compartments of said storage container include concentric first and second openings; the semicircular shaped aperture in said plate communicating with the inner of said concentric openings, the semicircular shaped annular slot of said plate communicating with the outer of said concentric openings.

13. A dispensing means of claim 12, and further including valve means interposed between said first and second compartments and said first and second dispensing regions for selectively regulating the flow of substances from said first and second compartments.

14. The dispensing means of claim 11, wherein said first and second compartments include first and second openings in side-by-side relationship and said flow distributing means further includes conversion means for changing a side-by-side flow of substances emitted from said first and second openings into a concentric flow the same substances,

15. The dispensing means of claim 14, wherein said conversion means include a second plate secured to said storage container, said second plate including a semicircular shaped aperture communicating with said first opening and a semicircular shaped annular slot communicating with said second opening;

and an intermediate spacer secured to said second plate, said spacer including a pair of concentric passageways, a first one of said pair of passageways communicating with said semicircular apertures in said first and second plates, the second one of said passageways communicating with the semicircular annular slots in said first and second plates.

16. Means for dispensing a plurality of substances to substantially form a single stream emitted from the outlet port comprising:

a storage container having at least first and second compartments therein;

nozzle means secured to said container;

disc means rotatably secured within said nozzle means; first tubular conduit means rotatably communicating

with said first compartment at one end thereof and passing through said disc means and pointed in a first predetermined direction at its other end thereof;

second tubular conduit means secured in said disc means and communicating with said second compartment at one end and pointed in a direction opposite said first predetermined direction at its second end,

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whereby thrust developed by the emission of substances from the second ends of said first and second conduit means will be additive to effect rotation of said disc means within said nozzle means.

17. The dispensing means of claim 16, and further including barrier means secured to said disc means and rotatable therewith, said barrier means located between the second ends of said first and second conduit means so as to produce an intertwined effect at the outlet of said nozzle means upon rotation of said disc means.

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U.S. Cl. X.R.