Aug. 30, 1938. A. SHAPIRO 2,128,760

LIQUEUR AND METHOD OF MAKING SAME

Filed July 1, 1937

Fig. 1.

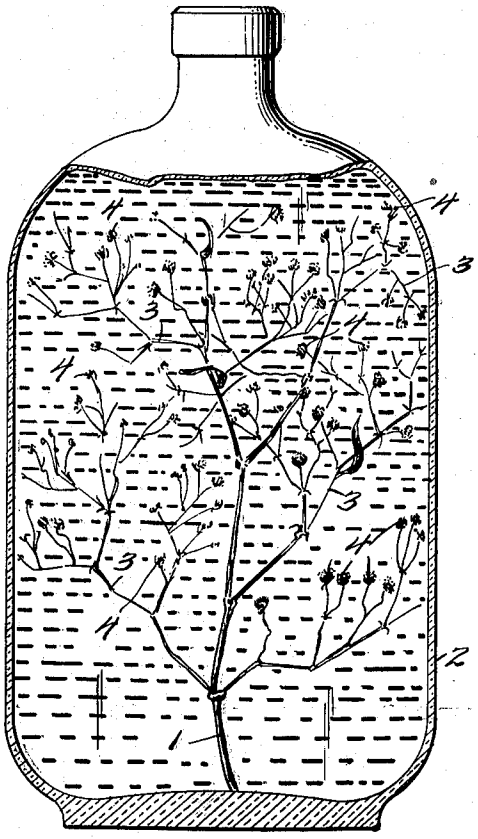
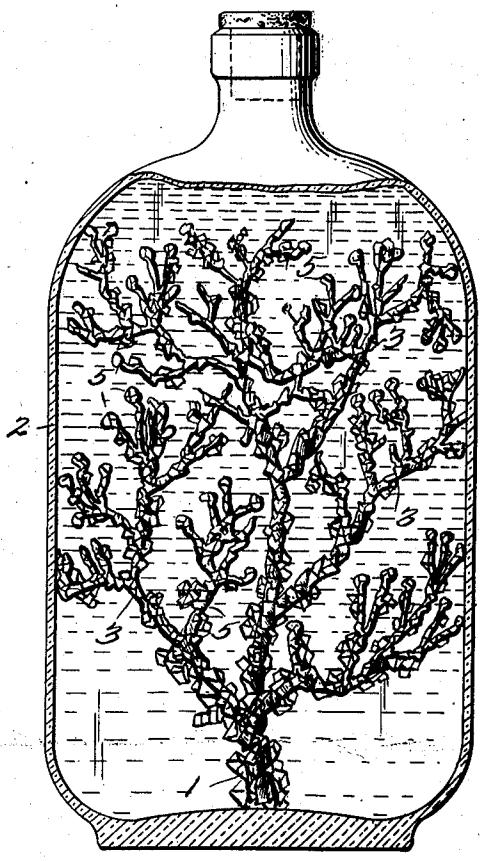


Fig. 2.



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Patented Aug. 30, 1938 2,128,760

UNITED STATES PATENT OFFICE

2,128,760

LIQUEUR AND METHOD OF MAKING SAME

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Application July 1, 1937, Serial No. 151,524

10 Claims. (Cl. 99—30)

This invention relates to improvements in liqueurs, more particularly to an improved method of producing cordials.

As is known, it has been suggested to produce cordials and equivalent liqueurs, by adding to an alcoholic beverage a mass of sugar crystals such as rock candy. An example of this type of beverage is the well known "rock and rye."

While such products are distinctly tasteful, the bottled article has not been particularly attractive in appearance, due to the fact that the crystals accumulate in a rather unsightly mass in the base of the bottle. Attempts have been made, in the past, to grow the crystals within the bottle itself and in a more pleasing and artistic form. Thus it has been proposed to add a sugar solution or syrup to an alcoholic base and to allow the crystals to develop within the alcoholic solution, in the expectation that the crystals would aggregate in an attractive pattern. Such methods, however, have not produced the expected results. It was found that the crystals tended to form on and adhere to the interior walls of the container, especially near the base, in unsightly aggregates. Furthermore, such earlier products were constituted entirely of sucrose and under relatively elevated temperature conditions tended rapidly to dissolve.

It has now been found that by a simple method of procedure it is possible to develop relatively permanent crystals in a definite or predetermined pattern within an alcoholic solution so as to produce a product which is as pleasing in appearance as in tactile characteristics. As will be seen more fully hereinafter, the improved crystallized products are characterized by novel physical as well as optical characteristics. These improved factors, taken in conjunction with the artistic dendritic or arborescent crystal development presents an article which is as characteristically novel as it is attractive. The novel crystalline structure similarly presents physicochemical characteristics which renders it eminently effective as a sweetening agent for alcoholic beverages. Since the invention comprehends the production of an artistic dendritic aggregation of sugar crystals, it may, for the sake of a term, be designated as a dendrose.

An object of the present invention therefore is to produce improved types of cordials or liqueurs.

Another object is to devise an improved method of packaging cordials and the like.

Yet another object is to provide an improved method of developing crystalline aggregates of predetermined form and within a potable liquor.

A further object is to produce an improved form of sugar crystal-containing liqueurs in which the solubility of the crystals may be controlled.

Yet another object is to provide artistic packages for liqueurs.

With these and equally important and related objects in view, the invention comprehends a concept of producing an improved type of sugar solution, and utilizing this in a blend with alcoholic beverages, and in conjunction with a cellular or similar framework, which is of such characteristics, as to form, so to speak, a preferential focus for crystallization of the sugar so as thus to develop a crystal growth of established or predetermined pattern within the alcoholic solution.

As intimated hereinbefore, it has been attempted to develop a crystalline mass within a transparent liquor container. This has been attempted by adding a warm solution of sucrose to an alcoholic base, the concentration of the sucrose, and the temperature of the syrup being so adjusted that when the temperature of the ultimate mixture was reduced to normal or room temperature the solution became supersaturated and crystallization was initiated. However, in such methods the crystals formed without any definite pattern, helter-skelter, so to speak, on the sides and bottom of the bottle resulting in unattractive and relatively massive crystal agglomeration confined largely to the lower portion of the container or bottle. Such products, furthermore, were not particularly permanent. When the container was shipped to warm climates or stored in warm places, the sucrose crystals tended rapidly to dissolve with a consequent diminution of the size of the crystals and an equivalent reduction in the attractiveness of the package.

According to the present invention, crystallized cordials or equivalent beverages may be produced which are characterized not only by a marked distinctiveness and an improved appearance, but which also present a permanency, especially under elevated temperature conditions, heretofore unattainable.

In order to render the invention more readily understood, a typical physical embodiment is shown in the accompanying drawing in which:

Figure 1 represents a transparent container or bottle in the early stages of the process.

Figure 2 represents the bottle or package after the crystals have grown in situ and in the indicated predetermined pattern.

The invention will be more readily understood upon a consideration of a typical, illustrative process for producing a 70 proof cordial.

In producing such a product, a special syrup is first prepared. In brief, such syrup comprises an aqueous solution which (at normal temperatures) is substantially saturated with sucrose and to which is added a quantity of lactose. It is to be noted at this point that lactose is not only less soluble than sucrose, but also differs from the latter in crystallizing in hard rhombic prisms rather than in soft monoclinic crystals. It will be remembered that sucrose is soluble in substan-

tially one-third of its weight in water, more specifically a saturated solution of sucrose at 25° C. contains approximately 67.9 per cent. of sucrose. Lactose, on the other hand, is distinctly less soluble; thus, a saturated solution of lactose at normal temperatures, contains approximately 17 per cent. of this sugar. Similarly, it will be appreciated that the utilization of lactose insures the production of a harder crystallized product and one which is of improved and characteristic optical properties.

In a typical operation, and as noted, for the preparation of a 70 proof cordial a syrup may be made up by dissolving approximately 518 pounds of sucrose in about 28 gallons of water. To this is preferably added about 6½ pounds of lactose. The percentage of concentration works out to be about 68 per cent for the sucrose and about 2.7 per cent for the lactose. Thus, it is evident that when reduced to room temperatures, there is present a sucrose solution which is saturated under normal room temperature and with plain water, to which water has been added a small quantity of lactose which is clearly less than the amount necessary to saturate. The solution is heated up to about 215° F. to insure dissolution of the sugars. This syrup, while in the heated condition, is then transferred to a container in which it is admixed with the alcoholic base. In actual commercial practice, the hot solution will be transferred to what is known as the process tank of the rectifying establishment. In this typical example given, the stated quantity of syrup is added to approximately 38 gallons of 190 proof aqueous alcohol which may contain the suitable flavoring constituents. As will be observed, the total volume constitutes approximately 100 gallons. This solution is agitated to homogeneously admix the syrup and the liquor, and is then transferred to a bottling tank.

During this preliminary procedure of mixing and transferring, the temperature of the mass will have diminished somewhat. In typical operations, it is found that in these circumstances the temperature of the mass is reduced to approximately 150° F. It will be understood that at any suitable stage in the process, suitable coloring and flavoring materials may be added. When natural fruit flavorings are utilized, it is desirable to add such at a later stage of the process, that is to say, when the temperature has been lowered to preclude any loss of the volatile flavoring constituents. These flavoring constituents may be chosen from a wide group, depending on the particular cordial or liqueur that is to be produced. Such flavors may therefore constitute natural fruit syrups, concentrated alcohol percolates of berries, seeds, and the like.

It will be observed that the solution at this point constitutes an aqueous alcoholic solution of a syrup which is maintained at elevated temperatures but which is supersaturated with respect to normal or room temperatures. The product thus constitutes a potentially crystallizable sugar solution and one in which the crystallization point may accurately be predetermined.

Such an alcoholic-sugar solution is employed in conjunction with a novel framework which constitutes or serves as a predetermined nucleus pattern.

In the preferred form of the invention, and as shown in the drawing, such a framework 1 is inserted into the transparent bottle 2, in the bottling plant, and the liqueur solution, while at an elevated temperature, is admitted to the bottle. Excellent results have been secured by inserting a sprig of the plant commonly known as "babies'-breath" (Gypsophila). A sprig of this plant, in effect, constitutes a dendrite on the branches 3 of which are present small blossoms or nodules 4, such nodules constituting spicules which function as foci of crystallization. Therefore, when such a twig is placed in a bottle, and the alcohol-sugar solution admitted, preferably at a temperature above 100° F., the bottle may thereafter be sealed as shown in Figure 2. When the liquor cools down to the crystallization point of the particular solution, the crystals 5 initiate at the blossoms and then develop or grow along the branches of the twig. In the typical case, the crystal growth starts within about 12 hours and attains ultimate development in about 48 hours. When the ultimate crystal growth or development has been attained, such crystals are found to follow the dendroid structure of the framework and encompass or adhere to the cellular structure of the twig as shown in Figure 2. A most interesting feature of the invention is the fact that the mass of crystals within the bottle area, so to speak, are distributed over the full height of the bottle and on or along the twigs, rather than being concentrated in an unattractive agglomeration at the base of the bottle.

While a natural sprig, such as "babies'-breath" has been indicated, as being desirable, it will be understood that under the broad concept of the invention, a number of specifically different materials may be employed. Thus, the dendridic (or other predetermined shape) framework may be comprised of any substance which is of a sufficiently spicular exterior as to effectively function as a focus for the crystal growth. Thus, in lieu of "babies'-breath", other twigs or frameworks of artificial plastics such as regenerated cellulose, cellulose nitrate, and the like, may be employed. If desired, such framework may be preliminarily treated by dipping in a suitable solution and drying so as to insure the presence of the foci for crystalline formation. Such plastic framework may be stamped out in any predetermined design or pattern so as to produce a crystal area of the desired configuration. Such configurations may, as in the case of the natural twigs, be of the dendritic form. However, as will be appreciated, other symmetric or fanciful designs may be attained. If desired, the framework may be shaped in the form of a letter corresponding to the name of the manufacturer or bearing some relationship to the trade-mark or brand. The ramifications or variations in the ultimate appearance and consequent improved salability will readily recommend themselves to those skilled in the art.

An interesting and distinctive feature of the present invention, from an aesthetic standpoint, is the fact that it presents for the first time the possibility of producing a package of crystallized cordial product in which the sugar crystals themselves may project beyond the level of the liquid. For example, distinctly pleasing effects are secured by producing, for example, a blackberry cordial. When this cordial solution is made up and bottled in the manner described, the mass of crystals forms in the dendritic structure within the bottle. When a portion of this liqueur is consumed, the bottle presents a distinctly attractive appearance in that it comprises a transparent container in the lower portion of which is a mass of colorful liquid in which is contained a tree of crystals and above which pro-

jects the upper reaches of the white, pure, crystals.

It will be understood that the methods described herein are applicable to the production of any type of sweetened liquor that is to say, with any type of liqueur or cordial. It will be understood also, as pointed out hereinbefore, that by properly controlling or regulating the amount of lactose in the syrup solution, the crystallization point may be controlled. For example, for the production of cordials which are to be shipped to the warmer climates, it is desirable to adjust the solution so as to effect crystallization at a relatively higher temperature, namely, about 90° F. This may readily be done by the simple expedient of increasing the percentage of lactose in the solution.

It will thus be observed that utilizing the concept of a special sugar solution in conjunction with the focal framework for the crystals, novel and improved types of products may be produced. It is particularly to be observed that such product does not involve any change whatever in the apparatus heretofore used or in the bottling equipment. The only additional step involved is the insertion of the nucleus framework in the bottle.

It is also to be observed at this point that the framework may be inserted in the bottle at any time prior to that at which the solution reaches its crystallization point. In other words, if desired, a container first may be filled with the alcohol-sugar solution and the twig or framework thereafter inserted and at any time before the solution is sufficiently reduced in temperature to insure crystallization.

In the preparation of the solution, and in order to prevent inversion, it may be desirable to add a small quantity of sodium sulphite. Thus, to one hundred gallons of alcohol-sugar solution, there may be added about an ounce of sodium sulphite dissolved in some water.

It will, of course, be appreciated that while the preferred embodiment of the invention comprises the preliminary preparation of a suitable syrup and the addition of this syrup to the alcoholic solution, such procedure is not essential. This is to say that the new crystallized products may be produced by other methods. For example, the novel products may be produced by dissolving the sugar directly in the alcoholic solution. Preferably such a method is carried out by adding the sugar to the alcohol or liquor contained in a kettle with a reflux condenser. After complete dissolution the resulting product may be transferred to the bottling tank and bottled in the manner described. As a specific example of such a process a rock and rye may be prepared with a 100 proof rye whiskey in the following manner. Into a kettle, equipped with a reflux condenser is admitted 53.3 gallons of 100 proof rye whiskey, 10.5 gallons of 190 proof alcohol, 518 lbs. of sucrose and 6½ lbs. of lactose. The mixture is heated to insure dissolution of the sugars. The resulting solution, at a temperature of not less than 150° F. is then transferred to the bottling tank and the final bottling carried out in the manner previously described.

It will be understood that when alcoholic bases of lower alcohol concentration are employed this high aqueous dilution is balanced or compensated by reducing the quantity of water in the syrup.

It will also be appreciated that while lactose has been described as the preferred ingredient in the syrup, other sugars such as maltose, which presents the same general characteristics, may be used either alone or in admixture with lactose for the purpose of insuring the supersaturation of the sucrose solution. It will be appreciated that while it is advantageous to form the initial syrup of both the sucrose and the lactose, the invention also comprehends the utilization of separate syrups of these two sugars. Such syrup may be separately added to the alcoholic base when so desired.

Therefore, while preferred embodiments of the invention have been described, it will be understood that they are given merely to exemplify the underlying principles of the invention and not as limiting it to the particular methods described.

I claim:

1. A syrup for addition to alcohol containing a substantially saturated sucrose solution at room temperature and approximately 2.7 per cent lactose.

2. An alcoholic liquor containing about 68 per cent sucrose and about 2.7 per cent lactose referred to the water content only.

3. An alcoholic liquor containing about 68 per cent sucrose and about 2.7 per cent lactose with reference to the water content and having therein a dendritic framework of sufficient mechanical strength to support the encrustment of large crystals precipitated thereon.

4. The method of making an alcoholic drink which comprises making a hot aqueous solution of sucrose and lactose, mixing alcohol therewith, the final concentrations with respect to water of the sucrose and lactose being about 68 and 2.7 per cent respectively and bottling the mixture whereby within about twelve hours after cooling, large crystals will form.

5. The method of claim 4 wherein said mixture is bottled prior to crystallization and provided with a framework of sufficient strength to support the encrustment of large crystals formed thereon.

6. The liquor of claim 3 wherein a sprig of a member of the Gypsophila family is utilized as the framework.

7. In the manufacture of an alcoholic liquor containing sugar crystals, the method for obtaining relatively large localized crystals, which comprises preparing an aqueous sucrose solution saturated at normal temperatures, adding about 2.7 per cent of lactose to said sucrose solution and adding this solution to an alcoholic mixture of a sufficiently high concentration to have no substantial effect on the ratios of sugars to water.

8. In the manufacture of alcoholic liquor, the method of controlling the crystal formation of sugar, which comprises providing a quantity of sucrose sufficient to saturate the water content of the liquor at room temperature and providing about 2.7 per cent of lactose with reference to the water content.

9. The method of claim 8 wherein a small amount of sodium sulphite is added to the solution.

10. The syrup of claim 1 wherein a small quantity of sodium sulphite is added.

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