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METHOD OF FORMING A COFFEE CONCENTRATE

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11 Claims. (Cl. 99—71)

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My invention comprises a novel process for obtaining coffee concentrates of greatly enhanced flavor and aroma, and more particularly my invention comprises a process for making a coffee concentrate in which the volatile aromatic principles of coffee are retained for increased flavor and aroma.

This application is a continuation-in-part of applicant's copending application Ser. No. 381,061, filed February 28, 1941, now Patent No. 2,360,342.

Coffee concentrates have been made by a variety of processes but insofar as their optimum flavor and aromatic properties are concerned they have one outstanding deficiency. This deficiency lies in their lack of a real full bodied aroma such as is found in a cup of coffee freshly brewed from freshly roasted and ground coffee. Although the coffee made from coffee concentrates has a certain desirable flavor factor, it has never been possible to obtain quite the proper aroma factor and this has retarded the acceptance of coffee concentrates since the aroma in coffee is a quality of equal importance with the flavor principles of the coffee.

It is the object of my invention to make a coffee concentrate that will produce a coffee beverage having a high and desirable coffee aroma.

It is a further object of my invention to produce a coffee concentrate that can be used to make a coffee beverage with an aroma substantially equivalent to a coffee beverage brewed from freshly roasted and ground coffee.

It is a further object of the present invention to enhance the flavor as well as the aroma of the beverage produced from a coffee concentrate.

It is a further object of the present invention to economically employ all desirable aromatic and flavor principles derivative from roasted and ground coffee in the manufacture of a coffee concentrate.

I achieve the objects of my invention by (*a*) plunging the roasted coffee at the peak of its roasting temperature into a liquid designed to release and entrap aromatic coffee principles, (*b*) by grinding roasted coffee while in the liquid which entraps aromatic coffee principles given off during the grinding and (*c*) by concentrating as specifically described hereinafter.

Other objects of my invention will be apparent from the general and specific description of my invention which here follows.

In the manufacture of my coffee concentrate I roast coffee to a temperature of about 425° F. for a period of time which varies according to the type of roaster and degree of roast of the coffee, but which may for example be from ten to fourteen minutes, but which at times may last as long as 25 minutes, e. g., a French roast.

I have found that I can entrap the desirable coffee volatiles or impart to liquid coffee concentrate a greatly enhanced flavor characteristic of fresh roasted coffee by plunging hot roasted coffee beans directly from the roasting apparatus, the beans being heated to approximately 425° F., into a solution in which the volatiles are soluble such as corn syrup and water or aqueous solution of coffee solubles and corn syrup or into a finished coffee concentrate (25° Bé.).

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I use about one and one quarter pounds of finished roasted coffee to each quart of liquid coffee concentrate or entrapping solution. I prefer to have my entrapping solution, such as liquid coffee concentrate as cold as possible, e. g. at a temperature of approximately 32° F., and surrounded by a cooling material such as brine so that the heat generated from the hot roasted coffee will not appreciably raise the temperature of the concentrate and so that the concentrate can be quickly cooled again. The cold extract thus assists in the condensation of the coffee volatiles.

As the hot roasted coffee strikes the cold liquid concentrate, steam is generated. The steam acts to steam distill the fresh coffee flavor and aroma which flavor and aroma are immediately condensed and asborbed by the liquid coffee concentrate. I allow the roasted coffee beans to remain in contact with the liquid coffee concentrate for a period of about an hour so that a substantial amount of the coffee aroma and flavor can diffuse out of the roasted bean into the liquid coffee.

It is a well known fact that when coffee is freshly roasted it contains a pressure of carbon dioxide of approximately one hundred pounds to the square inch. The water of the liquid concentrate acts to soften the cellular structure of the roasted coffee thereby permitting the gas of the coffee to escape in the liquid coffee and carrying with it certain of the flavor and aromatic principles of the coffee. After one hour, I centrifuge the roasted coffee beans to remove as much of the concentrate as possible from the coffee bean.

When the coffee volatiles have been absorbed for the desired period of time, I grind the freshly roasted coffee in the presence of sufficient water or aqueous coffee solution (the making of which will be described later herein) or C. S. U. and water or aqueous solution of coffee solubles and C. S. U. so that as the coffee is broken up in the grinding process, the volatile flavors released during the grinding of the coffee are entrapped and dissolved in the cold aqueous coffee solution or retaining solution. These volatiles normally are lost during a dry grind, i. e. the grind usually employed in grinding roasted coffee.

I add twenty-one gallons of ice cold water at a temperature of below 40° F. to one hundred pounds of freshly roasted coffee while grinding, the grinding of the coffee being effected to a so-