

COMMISSIONER'S DECISION

OBVIOUS: In View of Teaching of Several Citations

The steps in the process for removing undesirable substances found in the extract solution and known to cause clogging before the freeze concentration step, or spoilage of the extract after the freeze concentration step, was obvious to anyone skilled in the art having the teaching of the several citations in which such substances removed for other reasons.

FINAL ACTION: Affirmed.

This decision deals with a request for review by the Commissioner of Patents of the Examiner's Final Action dated July 5, 1972 on application 056,234. This application was filed in the names of Richard G. Reimus and Anthony Saporito and refers to "Concentration Apparatus". The Patent Appeal Board conducted a hearing on May 16, 1973, Mr. O'Gorman represented the applicant.

In the prosecution terminated by the Final Action the examiner refused the claims C1 and C2 because they do not define subject matter that is inventive over the following references.

United States Patents

1,507,410	Sept. 2, 1924	W. Zorn
2,410,157	Oct. 29, 1946	W.S. Frederickson

Publication:

Sivetz: Coffee Processing Technology Volumes 1 and 2. The AVI Publishing Co. Inc. 1963.

In the Final Action the Examiner stated in part:

Zorn does not use the word "dewaxing" itself. However, the patent teaches the filtration of hot extract to remove "suspended matter" (page 1 line 73). Zorn then goes on to say "----the filtered liquid is next passed through a cooling coil or tank 4 and the temperature reduced as low as possible without freezing. The liquid is then filtered again through a second filter 5 while in this cold state to remove such other matter as is reduced to suspension by cooling the liquid-----". (emphasis added) (page 1 lines 74 to 79) This seemingly is a fairly complete definition of what applicant means by the word "dewaxing".

There is little indication in the disclosure of the criticality of the "holding period". First of all, it is presented as an option by means of the expression "if desired". Secondly, the range of time given by the expression "a few seconds to several or many hours" covers almost every conceivable period that is at all practical. It appears impossible for Zorn to avoid operating within such a range and unreasonable to assume that he could or would.

With respect to the temperature range, applicant also mentions ranges of 80° F. to 32° F. and 45° to 32° F. on page 4 last paragraph as well as the range of 80 to 36° F. which applicant now declares critical.

With respect to the teaching of concentration ranges, it can be admitted that the specific values given are not mentioned. However, the range "of from a few per cent to as high as 40 to 50 per cent" is so wide that it is difficult to see why Zorn would not be operating within it. Furthermore, applicant's disclosure seemingly gives little evidence to support applicant's contention that either of the two types of ranges is in any way critical.

Applicant's argument that there is a critical difference between the "preferably from four to five days" of Frederickson and applicant's "if desired from a few seconds to several or many hours" is not accepted.

However, this point is covered in volume 2 of Sivetz. Volume 2 pages 14 to 21 discusses the conditions of ice formation, distribution of dissolved solids in the liquid and solid phases, the effect of wax separation and finally shows ice removal by centrifugation. Thus, Sivetz teaches wax precipitation and freeze-concentration.

The applicant in the response to the Final Action, dated July 5, 1972, stated in part:

In respect of the Zorn reference, the applicant emphasizes the point that Zorn is not concerned with the problem overcome by the present invention namely that of removing waxes and tars etc., from the coffee extract to facilitate freeze concentration. Indeed Zorn does not show any appreciation that this problem exists. The principal object of the Zorn disclosure is to eliminate from an infusion of coffee "the undesirable elements which upon standing causes the chemical or other changes which break down the flavor or otherwise cause the liquid to spoil" (see page 1, lines 26 - 30). Thus while on page 1, lines 69 - 90; Zorn makes disclosure of filtration, cooling and further filtration of a coffee extract prior to freeze concentration, this is not done with a view to removing waxes and tars to facilitate the freeze concentration operation, but is done with a view to eliminating undesirable elements which would cause spoilage of the coffee extract liquid.

It is pointed out that the applicants' claims are further distinguished over the disclosure of Zorn by requiring holding of the extract at its cooled temperature to allow formation of the precipitate prior to filtration. See for example claim C1

which recited "holding said extract at said temperature for a tempering period sufficient to precipitate waxes, tars and other coffee solubles from solution as sediment but less than the period wherein the coffee extract is appreciably degraded".

Frederickson method of removing the undesirable substances involves cooling of the extract to a temperature of from 33° - 34°F and allowing it to remain undisturbed for a quiescent period "preferably from between four to five days". The applicants take the position that such a lengthy quiescent period as proposed by Frederickson would result in a degradation of the coffee extract, and this is clearly not within the scope of the invention claimed in claim C1 which requires that the tempering period should be "less than a period wherein the coffee extract is appreciably degraded".

This application relates to a process for the treatment of liquid extracts for the preparation of soluble coffee solids.

Claims C1 and C2 read:

A process for dewaxing fresh coffee extract of 20 - 40% solids, which comprises cooling said extract to a temperature between the ice point of said extract and 70°F; holding said extract at said temperature for a tempering period sufficient to precipitate waxes, tars and other coffee solubles from solution as sediment but less than a period wherein the coffee extract is appreciably degraded; physically separating said precipitated material from said extract by a step chosen from the group consisting of filtration and centrifugation; and freeze concentrating the resulting extract.

In a process for the concentration of liquid coffee extract which forms insoluble precipitate at above the temperature at which ice forms therein and which contains therein about 20 to 40% dissolved solids comprising partial freezing of said liquid extract to form ice and concentrated liquid extract, the improvement which comprises precooling said liquid extract to a temperature between about 30 to 70°F to precipitate insoluble material therefrom, storing said liquid extract in said temperature range until sufficient precipitate occurs without substantial adverse flavor effect, centrifugally removing said insoluble material from said liquid extract, subsequently subjecting said liquid extract to reduced temperature to form ice therein and separating ice from said concentrated extract.

More specifically the process of claims C1 and C2 relates to the concentration of coffee extracts for the preparation of soluble coffee solids. The steps are as follows:

- a) precooling a coffee extract which contains 20 to 40% solids to a temperature in the range of 30° to 70°F to start the precipitation of insoluble materials,
- b) storing the cooled extract for a sufficient period of time to allow precipitation to occur. This period of time must not, however, be long enough to allow degrading of the flavor,
- c) physically separating the precipitated insoluble materials.

The purpose of carrying out the first three steps of the process, before carrying out the last step of freeze concentration, is to remove from the extract the tars and waxes which plug the centrifuge basket utilized in the freeze concentration step.

The question to be decided is whether the process of claims C1 and C2 can properly be refused on the grounds of obviousness in view of the cited prior art.

The cited reference to Sivetz establishes that percentages of solids in the range of 10% to as high as 30% and 40% are readily obtainable by normal percolation in the preparation of coffee extracts for the process of freeze concentration of coffee solubles. It is also noted that this reference establishes that these higher concentrations are obtained at the loss of coffee flavor. It is therefore known to utilize coffee extracts with a solid content in the range of 20% to 40%, as claimed by the applicant, for the preparation of soluble coffee solids.

The Frederickson reference recognizes the necessity of removing waxes and other soluble substances from coffee extract to prevent spoilage. The process utilized by this reference includes cooling the extract to a temperature in the range of 33° to 34°F and then allowing it to remain undisturbed for a period of time; this period of time however, is longer than the one specified in this application, and for slightly different reasons. The disclosure of the Frederickson reference actually goes beyond the scope of the present application in the

sense that not only does it mention waxes and other substances but also identifies three separate types of waxy substances which precipitate at different rates. The heavier precipitates settle to the bottom, whereas the lighter ones have to be separated by other means. The Sivetz reference also recognizes the undesirability of tars in coffee extracts, as discussed on page 148 of Volume 2, and that such tars will cling to any surface and are very difficult to remove. This reference suggests the removal of tars by centrifuging, which is the step specifically claimed by the applicant in claim C2 and one of the alternative steps in C1.

One of the objects of the process disclosed by the reference to Zorn is to remove undesirable elements from coffee extracts. Filtration is one of the steps utilized in this process. The applicant wishes to remove the same undesirable elements from the coffee extract, but for a different purpose, namely; to prevent clogging of the basket during the freeze concentration of the extract. The freeze concentration step carried out by the applicant is the same as carried out by Zorn.

The step of physically separating the precipitated insoluble materials from the coffee extract, which is carried out before the step of freeze concentration, is either one of filtering or of centrifugally removing, and as noted above these alternative steps are clearly indicated by both the "Sivetz" and "Zorn" references.

Furthermore, taking into consideration the teaching of the two cited patents, and the teaching of Sivetz which discusses thoroughly the Coffee Processing Technology, it is held that the step claimed by the applicant of removing undesirable elements, which are known to produce clogging, from a solution prior to usage in a freeze concentration process is obvious to one skilled in the art. Likewise, it is also held to be obvious to one skilled in the art to remove substances from the extract which have formed during a holding period and are

liable to cause the extract to spoil. Moreover, the Sivetz reference discusses completely the effect, of not only the substances mentioned by the applicant, but also many others such as oils, carbon, colloids, and ashes.

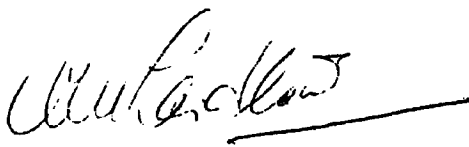
The Board is therefore satisfied that the applicant has not made an advance in the art and that the process of claims C1 and C2 does not merit the distinction of the grant of a monopoly.

The Board recommends that the decision of the examiner, to refuse claims C1 and C2 as lacking patentable subject matter, be affirmed.


J.F. Hughes
Assistant Chairman
Patent Appeal Board.

I concur with the findings of the Patent Appeal Board and refuse to grant a patent with respect to claims C1 and C2. The applicant has six months in which to appeal this decision in accordance with Section 44 of the Patent Act.

Decision accordingly,


A.N. Laidlaw
Commissioner of Patents

Dated at Ottawa, Ontario
this 25th day of May 1973.

Agent for Applicant

Smart & Biggar, Ottawa.