

COMMISSIONER'S DECISION

OBVIOUS COMBINATION: Of Known Process Steps

The basic steps of the process combination were met by the prior art, and it was obvious in view of prior knowledge for persons experienced in the art to ascertain and adopt without further invention the variations disclosed and claimed; each of the steps contributed its own individual result, and the order of the steps or the added step, has not produced a result beyond that which a competent person would expect from the teachings of the prior art.

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 064,978. This application was filed on October 15, 1969 in the name of Richard George Reimus et al and refers to "Ice Washing". The Patent Appeal Board conducted a Hearing on May 16, 1973, Mr. H. O'Gorman represented the applicant.

In the prosecution terminated by the Final Action the examiner refused this application as lacking invention over the cited prior art, namely:

United States Patents:

1,507,410	Sept. 2, 1924		W.M. Zorn
2,410,157	Oct. 29, 1946	Cl. 99-71	W.S. Fredrickson
2,967,778	Jan. 10, 1961	Cl. 99-205	P.S. Cole et al

Canadian Patents:

699,247	Dec. 1, 1964	Cl. 99-85	H. Svanoe
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Publication:

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

References of Interest:

759,397	May 23, 1967	Cl. 99-22	Pike
832,391	Jan. 20, 1970	Cl. 99-22	Muller

In this 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). He then goes on to say "-----the filtered liquid is next passed through a cooling coil or tank

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".

Applicant further states, in connection with the Zorn citation, that Zorn "does not disclose the crucial step of holding said liquid extract at a chilled temperature below 80°F. until precipitate forms". (Claim 1 lines 7-9).

In reply to this, attention is drawn to applicant's own disclosure page 4 line 20 wherein applicant states:

"If desired, the chilled extract may be held at the low temperature for from a few seconds to several or many hours before the waxes, tars and gums are removed, either by centrifugation or filtering".

Considering that Zorn does remove waxy material according to his disclosure, considering also the temperatures Zorn speaks of are "below 80°F." and considering further that given the processing equipment illustrated in Zorn, it would be impossible or at least unreasonable to operate it outside the time range specified by applicant of "from a few seconds to several or many hours" applicant's statement that Zorn "does not disclose the crucial step of holding said liquid extract at a chilled temperature below 80°F. until precipitate forms" cannot be accepted. Moreover, applicant's argument that "the use of the filter 5 as disclosed by Zorn is entirely optional since he states on page 2, lines 7-11: "the hot filtration and the intermediate cold filtration of the infused liquid may be omitted from the process without changing the result", is also not acceptable. In the first place, whether it is optional or not would seem to be beside the point. Secondly, it is not, in fact, optional in the sense applicant would make it, namely that it could be left out. It is optional only in the sense that the removal of waxy materials can be done at one of different stages. Thus, the material can be removed before, during or after freeze-concentration according to Zorn. Zorn's purpose is to remove it anytime so as to prevent its causing spoilage. Applicant's purpose is to remove it before freeze-concentration to improve the separation in the freeze-concentration process.

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Applicant points out, regarding Fredrickson, that he "does not disclose a freeze-concentration process". It is true that the number of steps disclosed by applicant is greater than the number of steps shown in Fredrickson. However, the addition of conventional steps to a process need not amount to invention and in this particular case does not. Admittedly, Fredrickson does not show "treating the ice to recover residual coffee therefrom" but the use of this limitation as a means of overcoming art is not accepted, for the reasons given above in connection with Zorn.

The applicant, in the response dated October 3, 1972 to the

Final Action, stated in part:

The applicant again emphasizes that Zorn does not disclose the final step in the applicant's process as claimed in claim 1 namely "treating the ice to recover residual coffee therefrom". In the second paragraph on page 3 of the final action it is suggested that this expression is "rather vague, indefinite and avoidably ambiguous". With due respect the expression is none of these things. The expression may indeed be broadly worded, but this in no sense renders it vague, indefinite or ambiguous. On the contrary the expression is clear, definite and exact. The fact that it does not restrict the claim to the precise method disclosed for recovering residual coffee from the ice is no objection against the use of the language selected by the applicants. The expression is supported by the disclosure, since the applicant has disclosed recovering residual coffee from the ice by returning the washings to the freeze concentration step.

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In summary it is the applicant's position in respect of the Zorn reference that the Examiner has failed to demonstrate that this reference makes a clear disclosure of the invention set forth in applicant's claim 1. Zorn, it is submitted, does not disclose the "holding" step in the dewaxing process of the invention of claim 1, and clearly does not disclose the final step of "treating the ice to recover residual coffee solids therefrom". For these reasons it is submitted that claim 1 must be considered as patentably distinguished over the disclosure of this reference.

U.S. 2,410,157 Fredrickson is discussed in pages 2 - 3 of the applicant's response of October 14th, 1971, and it is believed that the statements made therein are sufficient to establish that the applicant's claims are patentably distinguished over the disclosure of this reference. It is again emphasized that Fredrickson does not disclose a freeze concentration process, and the numerous, already detailed distinctions of claim 1 over this reference are sufficient to establish the patentable nature of the applicant's invention when compared with Fredrickson.

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As has been previously pointed out, the Sivetz reference makes no disclosure whatever of the precipitate forming and precipitate separation steps of the present invention in a freeze concentration process, nor does it disclose treatment of the ice separated from the freeze concentration process to recover residual coffee solids therefrom. Accordingly it is submitted that this reference nowhere approaches the claimed subject matter, but rather represents the state of the art as it existed prior to the discovery of the present invention.

This application relates to "Ice Washing" and more specifically it relates to a process for the preparation of concentrated comestible liquids and liquid extracts. Claim 1 reads:

A process for the concentration of a liquid aqueous coffee extract which when chilled produces a precipitate which is insoluble in said extract above the temperature at which ice forms therein, comprising: chilling a liquid extract containing ten to thirty percent by weight dissolved solids to a temperature between 80° and 36°F to form a precipitate therein; holding said liquid extract at a chilled temperature below 80°F until precipitate forms; separating said precipitate and said extract; subsequently concentrating said extract by subjecting said liquid extract to reduced temperature to form a mixture of ice and concentrated liquid extract; separating ice from said concentrated extract; and treating the ice to recover residual coffee solids therefrom.

The basic reference to Zorn reads in part:

To remove the undesirable elements, it is necessary to filter the infusion or to concentrate the solution and then filter the same. It is preferable, however, to filter the solution while it is hot and substantially as it comes from the infusing machine, then to cool the filtered liquid and to refilter the same to remove such other materials as may be thrown into suspension by the cooling of the liquid. This filter liquid is then frozen into a mushy state so as to freeze the water into the form of snow or ice crystals which are removed from the frozen mass so as to leave the concentrated coffee solution containing oils.

In order to demonstrate the alleged irrelevance of this patent the applicant emphasizes the following differences:

- a. dewaxing is not specifically taught by Zorn,
- b. cold filtration is optional and it is not necessarily carried out prior to freeze-concentration,
- c. holding the chilled extract is not taught, and
- d. Zorn does not teach the recovery of mother liquor from the separated ice.

Although Zorn does not use the same terms as those used in the present specification to identify the same or similar materials, their synonymy is obvious. An essential feature of Zorn's process is the removal of "undesirable elements" from the coffee extract obtained from the extractor, which is achieved in three steps:

1. hot filtration to remove insoluble suspended solids,
2. cool the extract in a tank as illustrated in the drawing, and
3. a filtration step to remove the precipitate which is formed in the cold state of the clarified extract.

Since the applicant obtains the wax and tar precipitate by cooling the coffee extract to the same temperature range as that taught by Zorn, and succeeds in separating the precipitate in the same manner, there is no reason to assume that the same treatment of the same material would have different results in the removal of undesirable elements such as "tars and waxes" which terms may be more precise as to the nature of "undesirable elements", but they obviously embrace the same substances.

To deny that Zorn in fact does not teach the holding of the chilled extract before cold filtration is equivalent to denying that the flow diagram is part of the specification of the Zorn patent and that Zorn does not use a tank furnished with cooling coils to chill the extract. It is impossible to cool the extract in this tank without "holding" it for a practical "tempering period" as claimed in claim 1. Since this tempering or holding period is not defined specifically in the claim, reference is made to the instant disclosure for definition, wherein it is stated on page 5 that "holding" is optional and that the range of tempering period is "...from a few seconds to several or many hours...." Thus if Zorn used the type of apparatus illustrated on his drawing - and it is unreasonable to assume that this was not his intention - he must have operated within the holding limits taught by the instant disclosure and claimed in claim 1.

The reference to Cole teaches a freeze concentration process in which the ice in the centrifuge is treated to recover concentrated extract therefrom, while the reference to Fredrickson teaches a step of removing natural waxes from the coffee extract prior to its concentration.

The applicant has advanced the argument that Fredrickson does not teach freeze-concentration, plus a number of minor differences, however, it was never suggested that Fredrickson fully anticipates the applicants' process. Nonetheless, the combination of the steps of cooling, holding and separating tars and waxes from coffee extract is taught by this reference. As a matter of fact the Fredrickson reference 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 filtration centrifuging, and sedimentation, and discusses completely the effect, of not only the undesirable elements mentioned by the applicant, but several others such as oils, carbon, colloids, and ashes. In addition, the recovery of the concentrated extract from the ice cake in the centrifuge is also discussed in volume 2 of the Sivetz reference on pages 14 to 21.

The references to Svance, Pike and Muller are all assigned to the same applicant as the instant application, and were cited to show that the combination of the steps of freeze-concentration, ice washing and the recovery of mother liquor from the washings already have been covered by patent protection.

The applicant has pointed out that the range of "80 to 36°F" in the instant application is different from the range reduced to "33 to 34°F" disclosed by Fredrickson. Of course the critical temperature is 32°F since the process must be carried out above

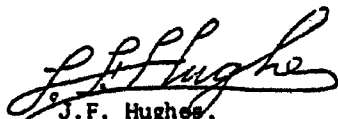
the freezing point of water. Further, page 4 of the instant application reads: "Preferred temperatures for the chilling operation are between about 45 and 32°F because this temperature range insures virtually complete removal of insolubles." It follows that claiming a restriction "to 36°F" is the same basic step as taught by Fredrickson.

Accordingly, it is clear that all steps per se of the instant process are known. The applicant however has advanced the argument, specifically at the Hearing, that no single reference discloses the combination of process steps, and that it is the total claimed process which must be examined to show the advance in the art, with which the Board is in agreement. It is, however, settled law that the process must nevertheless be evaluated as to whether the total process was an obvious thing or step for a person skilled in the art to take in view of the "state of the art" as that established by the examiner, and of what was previously known and derived from experience in the art, as well as the contents of previous writings, textbooks and other documents.

It is held that the basic idea of "the preparation of concentrated soluble coffee" is taught by the prior art. It follows that the specific issue is whether it would have been obvious to respond to these teachings by carrying on with tests, experiments etc. which are not themselves inventive, or to merely add a known step, or change the order of the steps, without obtaining some unexpected result. Specifically, the applicant's claims are directed to a coffee-extract concentration process including dewaxing and the recovery of coffee solids adhering to the ice crystals separated during freeze-concentration. The process includes a series of known steps which contribute in an known manner their known individual end results and the applicant has not shown that the particular choice of the order of

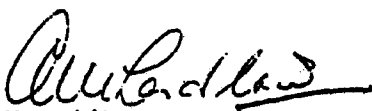
the steps or the added step has produced a result beyond that which a competent person would expect from the teachings of the prior art. Furthermore, it is held that the variations in the process disclosed and claimed from that shown by the prior art are of a nature that competent persons would be expected to ascertain by trial and experiment which does not involve further invention over the teachings of the prior art.

The Board is therefore satisfied that the applicant has not made an advance in the art which merits the distinction of the grant of monopoly, and recommends that the decision of the examiner refusing the application for want of 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 the grant of a patent with respect to the subject matter of this application. The applicant has six months within which to appeal this decision in accordance with Section 44 of the Patent Act.

Decision accordingly,


A.M. Laidlaw,
Commissioner of Patents.

Dated at Ottawa, Ontario
this 3rd day of July, 1973.

Agent for Applicant

Smart & Biggar, Ottawa.