COMMISSIONER'S DECISION

OBVIOUS COMBINATION: Of Known Process Steps

All of the process steps of the combination claimed were known and, except for the final step of drying the coffee beverage, were met by one of the citations; while the final step of drying coffee beverage by various conventional means was well known as taught by several other citations. While no one citation showed the process as a whole, each of the steps contributes its own individual result and combining the final step with the other steps has not produced a result beyond what a competent person would naturally expect from the teachings of the prior art as a whole.

FINAL ACTION: Affirmed.

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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 071,551. This application was filed in the name of John G. Muller and refers to "Beverage Process".

In the prosecution terminated by the Final Action the examiner refused to allow the application on three grounds:

A. The application lacks invention in view of prior art,
B. The divisional status of the application is refused because the "subject matter" in the application was not "specified" in the original application, and
C. Claims 5 to 7 inclusive relate to old products.

The cited prior art references are:

United States Patents:

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|---|---|---|---|
| 2,292,447 | Apr. 22, 1941 | Cl. 99-199 | J.C. Irwin |
| 2,354,633 | July 25, 1944 | Cl. 99-205 | F.W. Bedford |
| 2,503,695 | Apr. 11, 1950 | Cl. 99-205 | R.E. Webb |
| 2,858,942 | Nov. 4, 1958 | Cl. 210-374 | E.P. Wencelberger |
| 2,967,778 | Jan. 10, 1961 | Cl. 99-205 | S.P. Cole |

Canadian Patents:

| | | | |
|---|---|---|---|
| 272,499 | July 19, 1927 | Cl. 161-8 | A.B. Jones |
| 333,780 | July 4, 1933 | Cl. 161-3 | W.E. Guest |
| 594,366 | May 15, 1960 | Cl. 161-9 | J.P. Terrett |
| 699,247 | Dec. 1, 1964 | Cl. 99-85 | H. Svande |
| 759,397 | May 23, 1967 | Cl. 99-22 | J.W. Pike |
| 832,391 | Jan. 20, 1970 | Cl. 99-22 | J.G. Muller |

In this action the examiner stated in part:

> In regard to objection A
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> Applicant replies to the citation of the art in the last Office action by pointing out that some of the art does not disclose the drying of ice-washings and the remaining art does not disclose a freeze-concentration process. More specifically, applicant points out that Irwin, Bedford, Webb, Wencelberger and Cole do not mention drying of ice-washings to obtain the coffee therein, and Canadian Patents 272,499; 333,780 and 594,366 do not speak of freeze-concentration when they disclose spray-drying of dilute solutions of coffee. In a sense then, the specific lack in the first group is made up in the second group.

Applicant, in mentioning in his disclosure that ice-washings can be recycled (to extractors or freeze-concentrators) or returned to existing spray-dryers is only reiterating that washings should not be discarded and that existing spray-dryers are fully capable of drying dilute coffee extracts. No unexpected result is achieved by spray-drying of dilute coffee extract such as ice-washings. The result is not unexpected but only what a person skilled in the art would expect.

In regard to objection B

To understand what applicant means when he says the "subject matter" has been "specified", it is only necessary to compare claims 1 and 2 of the claims cancelled on October 23, 1969 with claims 1 and 2 of this application as originally filed.

A comparison of the wording of the two pairs of claims shows them to be very similar. Except for a slight variation in a range, steps (a) to (c) read the same and claim 2 in both cases is verbatim.

Step (d) in the original is quite different from step (d) in the application. Step (d) in the original refers to a step we now know as "freeze-drying". Step (d) herein relates to any process of drying and includes "freeze-drying" without specifically mentioning it.

In regard to objection C

Reason (C) for refusing claims 5 to 7 is that they relate to old products.

The applicant, in the response dated July 5, 1973 to the Final Action, stated in part:

In regard to objection A

In essence, the cited prior art falls into two categories. One category, including references such as the U.S. Patents to Irwin, Bedford, Webb, Wencelberger and Cole, discloses processes for freeze concentration of fruit and vegetable extracts and coffee, including the recovery of juice or extract from the separated ice. The second category includes the cited Canadian Patents to Jones, Guest and Terrett, and shows that spray drying of comestible extracts such as coffee is known. By combining the teachings of these two categories of references, the Examiner seeks to show that the applicant's claimed process is known from the prior art. However it is respectfully pointed out that no single cited patent discloses the process claimed by the applicant namely the preparation of a coffee beverage product including:-

(a) Preparing an aqueous coffee extract "containing about 10 - 30% by weight of dissolved coffee solids";

(b) Concentrating that extract by partial freezing to form a mixture of ice and more concentrated extract "containing about 32% by weight of dissolved coffee solids";

(c) Separating the more concentrated extract, and

(d) Recovering coffee beverage product from the ice and "drying the product thus recovered".

The Examiner has demonstrated that individual ones of the above referred to steps are known from the prior art. However what he has failed to show is any reference disclosing

the overall process set forth in the applicant's claim 1. It is only by postulating an improper combination or mosaic of the prior art references that the applicant's invention can be approached, and even at that the specific ranges of concentration are not disclosed.

In regard to objection B

From this comparison the Examiner draws the conclusion that the "subject matter" in this application has not been "specified" in the original. However the comparison which the Examiner has made does not involve the claims as at present on file in the subject application. Present claim 1 contains substantially the same content as paragraphs a, b and c, of the claim 1 recited at the top of page 5 of the final action. However present claim 1 does not include paragraph d which recites "subjecting said more concentrated extract to dehydration to a moisture content of 1% to 5% by weight", but instead recites "recovering coffee beverage product from said ice and drying the product thus recovered".

Now considering the language of present claim 1 it is evident that this has been specified in the parent application, since present claim 1 corresponds to the subject matter of paragraphs a, b, and c of claim 1, together with claim 2 of patent 832,391.

In regard to objection C

Claims 5 - 7 are process dependent product claims, and as such cannot be held to be directed to old product if the process claims from which they depend are patentable. The applicant's position is that these process claims are patentable, and therefore the product claims should be allowed.

The claims of this application relate to a process for the preparation of a coffee beverage product which is soluble in water

Claims 1 to 7 read:

1. A process for the preparation of a coffee beverage product which is soluble in water, said process comprising:

preparing an aqueous coffee extract containing about 10 to 30 per cent by weight of dissolved coffee solids:

subjecting said extract to concentration by partial freezing to form a mixture of ice and a more concentrated extract containing about 32% by weight of dissolved coffee solids; and

separating said more concentrated extract from said ice; and

recovering coffee beverage product from said ice and drying the product thus recovered.

2. A process according to claim 1 in which said product is recovered by washing said separated ice and drying said washings.

3. A process according to claim 2 wherein said separated ice is washed with water in a centrifuge.

4. A process according to claim 2 or claim 3 wherein the washings are spray dried.

5. The coffee beverage product recovered from the ice in the process according to claim 1.

6. The coffee beverage product recovered from the ice in the process according to claim 2.

7. The coffee beverage product recovered from the ice in the process according to claim 3.

The first issue to be decided is whether the claims 1 to 7 inclusive are allowable over the prior art cited, and as noted claims 1 to 4 are directed to the process of preparing the coffee beverage product whereas the remaining claims are product by process dependent claims.

Basically, the instant process comprises the following steps:

a) preparing an aqueous coffee extract

b) subjecting said extract to concentration by partial freezing to form a mixture of ice and more concentrated extract of dissolved coffee solids; and

c) separating said extract from said ice; and

d) recovering coffee beverage product from said ice and drying the product recovered.

The cited reference to Cole discloses a process for the manufacture of concentrated liquids and juices including coffee extracts. This patent in column 1 at lines 19 to 24 and 51 to 56 reads:

> The method and apparatus herein described may be used for the production of concentrated juices of citrus fruits such as orange, lemon, grapefruit, lime and the like, various juices of deciduous fruits including but without limitations apple, pear, peach, pineapple and the like, and to other beverage liquids such as milk, coffee, etc.
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> ...
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> George S. Sperti, in Patent No. 2,588,337, dated March 11, 1952, taught a process for concentrating juices in which the juice was first subjected to freezing conditions in order to form ice crystals therein, and the unfrozen liquid was then separated as a concentrate from the ice crystals, preferably by centrifuging.

It is clear from these excerpts that process steps (a), (b) and (c) were obviously known as early as 1952.

The aqueous coffee extract mentioned by the applicant is also included in the liquids or concentrated juices mentioned in lines 21 and 24. The step of subjecting the extract to partial freezing to form mixture of ice and concentrated extract is the same step, mentioned in the reference to Cole, of subjecting the liquid to freezing conditions in order to form ice crystals. The step of separating the ice crystals from the unfrozen liquid by the preferred step of centrifuging is the same as that included in step (c) of the applicant's process. Obviously, if the ice crystals and the unfrozen liquid or the concentrate are to be separated they will each become separately available. This is the first part of step (d) of the applicant's process.

The last part of step (d) namely, the step of drying the product recovered is not specifically mentioned in the cited reference to Cole, however, it is specifically mentioned in the cited reference to Irwin, Jones, Guest and Terrett; for example, the reference to Irwin reads in part:

> Coffee which has been brewed according to the conventional methods may be subjected to the drying process of this invention and the dried material is highly resistant to caking, is immediately soluble in water, and has been found to retain the aroma and taste of the original brand used in brewing the coffee. It is preferred to concentrate the coffee by conventional methods before subjecting it to the present drying process.

Moreover, the instant disclosure in paragraph 4 of page 1 describes the drying of coffee products in the following terms:

> The conventional method of complete dehydration of the coffee product is by means of spraying the concentrated extract at high temperature into a tower to flash off all remaining water so that the final product is a soluble powder. Unfortunately, during this flash evaporation process which is known as spray drying, much of the flavor components of the coffee which are volatile flash off along with the water and must somehow be replaced in the coffee powder. Even this replacement of the coffee aroma elements into the coffee powder produces a product which is not truly comparable to freshly brewed coffee.

The reference to Bedford relates to a process for the recovery of valuable constituents from ice when <u>any liquids</u> are concentrated by freezing and more particularly when fruit and vegetable juices

are so concentrated. This process includes the steps of: partial freezing, centrifuging, ice washing and the recycling of washings to the partial freezing equipment.

It is noted that the restriction regarding the percentage content of solids by weight included in the instant claims, is not specifically recited in the references, however, the percentages of 10 to 30% specified for the content of coffee solids in the initial aqueous coffee extract is nevertheless within a range to be expected whenever a concentrate is prepared for any of the processes mentioned in the references listed above. Furthermore, the particular restriction of "about 32%" by weight of dissolved coffee solids expected after the partial freezing is also within a range to be expected whenever a concentrate is prepared.

Accordingly, it is clear that all steps per se of the instant process are known. The applicant, however, has advanced the argument 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, to which the Board is in agreement. It is, however, settled law that the process must be evaluated as to whether it was an obvious thing or step for a person skilled in the art to do 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 invention, "the preparation of powdered soluble food products" is taught in 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 un-

expected result. Specifically, the applicant dries the coffee beverage product after having carried out a series of steps which include the known steps of producing a concentrate, partial freezing, separating the ice from the concentrated coffee beverage, and then recovering coffee beverage product from the ice so separated by means taught by the citations. The process includes a series of known steps which contribute their known individual end results; moreover, the applicant has not shown that the particular choice of the order of the steps or the added step has produced any new result beyond that naturally to be expected from the teachings of the prior art. Furthermore, it is held that any variation in the process is of a nature that could easily have been ascertained by non-inventive trial by persons skilled in the art.

It is held therefore that claims 1 to 4 do not define patentable subject matter over the cited references. It also follows that the product claims 5 to 7, which are dependent on claims 1 to 3 do not define patentable subject matter. Moreover, it is held that no patentable subject is present in the application.

The second ground of rejection "refusal of divisional status" need not be considered in view of the fact that the grant of a patent is refused on this application.

The Board is therefore satisfied that the subject matter of this application does not warrant the grant of a patent monopoly, and recommends that the decision of the examiner, to refuse the application 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 on the subject matter of this application. The applicant has six months in 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 13th day of June, 1973.

Agent for Applicant

Smart & Biggar, Ottawa.