

BETWEEN :

J. R. SHORT MILLING COMPANY }  
 (CANADA) LIMITED ..... } PLAINTIFF;

1939  
 Nov. 6-9.  
 —  
 1940  
 Nov. 9.

AND

GEORGE WESTON BREAD AND }  
 CAKES LIMITED ..... } DEFENDANT.

AND

J. R. SHORT MILLING COMPANY }  
 (CANADA) LIMITED ..... } PLAINTIFF;

AND

CONTINENTAL SOYA COMPANY }  
 LIMITED AND GEORGE WESTON } DEFENDANTS.  
 BREAD AND CAKES LIMITED. }

*Patent — Infringement — Invention — Subject-matter — “Obvious” — Anticipation — Divisional applications — Process patent — Patent Act, 25-26 Geo. V, c. 32, s. 40 (1) — “Substance” prepared or produced by a “chemical process” — “Intended for food” — Claims for product manufactured and for process of manufacturing such product.*

The actions are for alleged infringement of four different patents owned by the plaintiff, the invention in which relates to a substance of vegetable origin, derived from the soy-bean, for bleaching flour, particularly in bakeries, while mixing dough preparatory to the making of bakery products.

The Court found that there is invention in the bleaching agent disclosed by the patentee, and the process or processes of producing the same, and that the same had not been anticipated.

The Court further found that the defendant Continental Soya Company Limited had infringed plaintiff's patents by manufacturing and selling a bleaching agent called Snowtex and that Geo. Weston Bread and Cakes Limited had infringed by using the substance Snowtex in its bakeries.

*Held:* That for a thing to be “obvious” it must be something that would directly occur to some one who was searching for something novel, a new manufacture or whatever it might be, without the necessity of his having to do any experimenting or research, whether the research be in the laboratory or amongst literature.

2. That in order to sustain the defence of anticipation the latter invention must be described in the earlier publication that is held to anticipate it; it must be shown that the public have been so presented with the invention that it is out of the power of any subsequent person to claim the invention as his own.
3. That if patents are granted on divisional applications directed by the Patent Office none of them shall be deemed invalid, or open to attack, by reason only of their numbers.

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4. That the bleaching material prepared by the processes described in the plaintiff's patents was not prepared or produced by a chemical process within the meaning and intendment of s. 40 (1) of the Patent Act; that such bleaching material is not a "substance" to which s. 40 (1) of the Patent Act applies.
5. That the patentee herein is entitled to claim not only for the product which is a new manufacture, but also for the processes by which it is made.
- ACTION by plaintiff herein to have it declared that four patents owned by it are valid and have been infringed by defendants.

The action was tried before the Honourable Mr. Justice Maclean, President of the Court, at Ottawa.

*C. F. H. Carson, K.C.* for plaintiff.

*C. H. A. Armstrong, K.C.* for Geo. Weston Bread and Cakes Limited.

*E. G. Gowling and M. C. Holt* for Continental Soya Company Limited.

The facts and questions of law raised are stated in the reasons for judgment.

THE PRESIDENT, now (November 9, 1940) delivered the following judgment:

These two actions, which were heard together, relate to alleged infringements of four different patents acquired by the plaintiff by assignment. It will be convenient hereafter to refer to the defendant Continental Soya Company as "Continental," and to the defendant George Weston Bread and Cake Company Ld. as "Weston." In two of the patents in suit one Haas was the inventor, while in the remaining patents Haas appears as joint inventor along with one Bohn. It will be convenient to refer to these inventors by the name of Haas only. Broadly, the inventions here relate to a substance, of vegetable origin, for bleaching flour, particularly in bakeries, while mixing dough preparatory to the making of bakery products. Whenever I refer to "flour" it will be understood that I have reference to wheat flour.

The bleaching agent which Haas claims to have discovered, a bleaching enzyme, is derived from a natural vegetable source, particularly and preferably from the soy-

bean, which, when prepared according to his disclosed methods, and when incorporated in unbleached or lightly bleached flour at the flour mills, or at the bakery when making a batch of dough preparatory to the making of bread, has the effect, in the presence of heat and moisture, of whitening the bread made from such flour or dough. This bleaching agent decolorizes carotin, a yellow pigment found in grains, vegetables, seeds, plants and the like. The carotin content of flour was something that had long been known. The incorporation of a bleaching agent in the dough at the bakery eliminates the time and expense of a separate bleaching operation at the mill, hitherto the usual practice, thus enabling flour to be sold unbleached, in which condition it is said to be best fitted to keep well in storage; and the employment of a flour bleaching agent in the bakery is claimed to have the further advantage that the baker is enabled to introduce it into the batch of dough in the proportion his experience deems the most desirable for his purposes, and this, it is claimed, avoids a lack of uniformity in the bleaching of flour, which is liable to occur when flour is bleached at the mill by the processes hitherto known and employed. It is claimed also that the bleaching agent in question eliminates certain other difficulties and objections incident to the use of chemical bleaching agents, the flour bleaching agents hitherto commercially known and employed.

The bleaching of flour came into practice in the early years of this century, prior to which time flour was sold by flour mills to the baking trade in an unbleached state. It had long been recognized that freshly milled flour required a maturing period before being used for bakery purposes in order to effect some degree of bleaching, and to develop its maximum baking qualities, and for that reason it was the practice to place in storage large stocks of milled flour, and wheat as well, which necessitated the provision of substantial storage space, a tie-up of capital for varying periods, thus incurring additions to milling costs. The results obtained from the maturing of flour in storage would vary from one crop year to another, and according to the type of wheat from which it was milled, the region of production, and other causes, and generally such results were variable and unsatisfactory. As already stated wheat contains carotinoid pigments which impart

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their colour to the ground flour, and to the baked loaf of bread, giving the latter a creamy or yellowish colour, and while a limited natural bleaching occurs while flour is in storage, due to the oxidation of the carotin, yet this is not sufficient to give the desired whiteness to bread baked therefrom, and particularly in the case of flour milled from some wheats. To whatever causes attributable, the lack of uniformity in the colour of bread came to be objectionable to bakers, because their patrons were coming to demand not only a white loaf of bread, but also uniformity in that colour.

Soon after the beginning of this century the matter of the bleaching of flour engaged the interest and study of millers and this resulted in the installation of bleaching systems in flour mills, primarily designed for the whitening of flour. The process then adopted was the chemical bleaching of flour, that is artificial bleaching by the use of chemical re-agents, and in due course this process of flour bleaching was widely practised in European countries, in the United States, and later in Canada. Four different chemical processes came to be well known and commercially employed for bleaching flour, and these are mentioned in the Specifications in question here. The first bleaching agent to be employed extensively on this continent, in the United States, was known as the "Alsop" process, but this process was held to have been earlier introduced in England where it was known as the "Andrews" process. Nitrogen peroxide was the chemical used in this bleaching process. Another chemical bleaching process which came into commercial use was one introduced in the United States by the Industrial Appliance Company, known as the "Beta Chlora" process, the chemical employed being chlorine, containing sometimes a small amount of nitrosyl chloride. Later, a third flour bleaching process came into use, known as the "Agene" process, the chemical employed being nitrogen trichloride, and, I was told, it largely displaced the other two processes just mentioned. I understand the Agene process is used to-day quite extensively by flour mills. The fourth process, a still later development, was known as "Novadel," the chemical employed in this process being benzoyl peroxide, and this bleaching agent entered into the flour at the mill in powder form, whereas in the other three pro-

cesses mentioned the bleaching agent was introduced into the flour in the form of gas, at the mill also. Each of these four chemical processes of flour bleaching had their disadvantages, it is alleged, and these disadvantages are mentioned by Haas in some, if not all, of his Specifications. It is to be remembered that in all the four chemical processes mentioned the bleaching agent was introduced into the flour at the mill, and in no case by the baker in his bakery, in the baking of bread.

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Evidence was introduced to show that the bleaching of flour by chemical agents, in the form of gas or powder, when first introduced, met with more or less opposition in many countries and became the subject of considerable controversy. Investigations by public authorities into the use of such bleaching agents followed. In some instances the employment of certain chemicals for flour bleaching purposes was prohibited, or regulated, for a time, but apparently opposition to the use of chemical agents gradually diminished or entirely ceased. In point of fact the chemical bleaching of flour is still quite general in Canada and the United States, and elsewhere probably, and, I think, it was said that about fifty per cent of flours used in Canadian and American bakeries are still chemically bleached. Chemical bleaching agents provide one medium for the bleaching of flours and the precise extent of their use as compared with the particular bleaching agent disclosed by Haas is of no real practical consequence here. All of them are being used, in substantial quantities, and in fact unbleached flours are still being sold and used in substantial quantities.

It will be convenient now to refer to the Specifications of the several patents in question, and it will be necessary to do so at some length, in some instances at least, in order to present a fairly complete and accurate statement of that which Haas describes and claims as inventions. The first patent to be mentioned is that numbered 347,252, issued on January 1, 1935, the same being a reissue of patent No. 319,123, which was applied for in February, 1929, and issued in January, 1932. After stating that the invention relates "to a process of bleaching, and more particularly to a process of bleaching flour in the presence of warmth and moisture," and after describing the principal processes hitherto commercially employed for bleaching flour

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together with their disadvantages and difficulties, which are the chemical processes which I have already mentioned, the Specification proceeds to describe the invention thus:

The present invention seeks to eliminate these difficulties and complex treatments by the provision of a bleaching agent that is cheaply and readily prepared; that is easily obtained in the raw state; that in no way affects the flour except to decolorize the carotin therein; that possesses food value; that is efficient and satisfactory in use in that it may be and preferably is incorporated in the flour when the dough is mixed preparatory to baking the bread, thereby eliminating the time and expense of a separate bleaching operation.

This bleaching agent is entirely of vegetable origin and is probably itself an enzyme or enzyme-like substance. It decolorizes the yellow carotin which gives unbleached flour its characteristic yellowish colour. It contains an abundance of active bleaching or carotin-removing enzymes. The bleaching property of the agent is destroyed at the temperature of boiling water. It acts rapidly at temperatures between 40 and 50 degrees centigrade, and fairly rapidly at room temperature.

This process of bleaching flour, or more exactly the flour in the form of dough, has a number of advantages. In the first place, the use of the above mentioned chemicals, with their disadvantages, is avoided. Secondly, the danger of over-treatment of the flour or dough is non-existent since the sole active principle or bleaching agent employed is an enzyme obtained from a vegetable source, and the use of an excess of several times the amount necessary to bleach the flour will cause no damage whatever, although, if the soy-bean is used as the source of the enzymic agent, large excessive amounts will give an undesirable bean flavour. Similarly, the colour of the soy-bean flour will begin to become noticeable since the bleaching action operates selectively to whiten the unbleached wheat flour but does not whiten the bean flour. This is also true as to the flavour and colour imparted by other plant material which may be used in lieu of the soy bean. Thirdly, the baking characteristics of the flour are not changed. Thus the baker can obtain any further development of his dough and gluten he desires by use of a yeast food, and/or high speed mixing. The latter is the common practice in this country, and our process is especially adapted thereto. Fourthly, flour can be manufactured and sold unbleached, in which condition it is best fitted to keep well in storage.

The most practical and potent source of this enzymic principle of bleaching agent is the soy bean, although it is understood that the invention contemplates the use of enzymic vegetable material as a carotin decolorizing agent, from whatever source such material may be derived, as for example, from other equivalent members of the bean family. Numerous plants contain the enzymic agent obtainable therefrom in substantially the same manner as described herein in connection with the soy-bean. One method of obtaining this enzymic material in an active state and by a process commercially practicable, is by treating soy-beans as follows:

Soak the beans for twelve to forty-eight hours in water of approximately room temperature, using enough water to cover the beans at all times. At the end of the steep period, the water is drained off and the beans are well washed with two or three changes of fresh water. At this point the beans have swelled to about three times their original size. After draining off the wash water, the beans are ground in a mill which

reduces them to a paste or sludge. This paste or sludge is thoroughly mixed with a cornstarch or corn flour or other cereal flour which has preferably been gelatinized to increase its water absorbing capacity.

This particular treatment of the soy-beans was referred to as the "wet process," as distinguished from what is called the "dry process" and which is described in another patent. The Specification then proceeds:

The resulting mixture is a rather dry, friable mass. This mass is dried in vacuo at a temperature not exceeding 60° C. in order not to injure the enzyme, and it is then ground to a fine powder. If an amount of cereal flour which is to be mixed with the ground soaked soy beans is used which corresponds to two parts of cereal flour and one part of soy beans by weight before soaking, the resulting preparation will be of such strength that when used in a bread dough to the amount of 1-2% of the flour, a practically complete decolorization of the characteristic yellow colour of unbleached flour is obtained. No precautions for proper use are necessary.

Other methods of manufacture are quite feasible. The soaked soy beans (or other source of the enzymic material) may be ground to a paste and dried at a low temperature in vacuo, and then ground to a powder. By another method, the soaked soy beans may be ground with additional water, subjected to filtration through cloth to remove the fibre, and the filtrate, which has the appearance of cow's milk, dried at a low temperature and ground to a powder in which dry condition it will not spoil while in storage. It should be noted that the drying treatment does not destroy the bleaching principle which is in the filtrate. In lieu of drying the filtrate, the milk itself may be added directly to the mixture forming a dough batch. The invention is not limited to a specific method of obtaining the active principle, but includes any process by which the active principle which is apparently an enzyme, may be obtained. A necessary precaution in any method of preparing the product is to keep the temperature at all times below about 60° C. in order that the active principle or enzyme may not be injured or destroyed. The ground material or powder prepared from the beans or equivalent plant source by methods such as those above described, may be designated as bean meal or vegetable flour.

This bleaching agent is only active in the presence of warmth and moisture, and hence the ground preparation containing it may be mixed with the flour in a dry state at any time after the flour is made and the mixture stored indefinitely without deterioration. Or the bleaching material may be stirred into the water used to make the dough, or it may be even dumped into the dough mixer on top of the other ingredients before mixing has started, with good results. Extra water should be added to the dough at the rate of 2/3 lbs. of water for each pound of the powdered material containing the active principle made as described above. This makes the use of the product economical.

The specification discloses the bleaching agent as being best obtained from the soy bean and as being employed to bleach flour, but these disclosures are by way of example only and it is understood that it is immaterial from what source the enzyme-like principle or bleaching agent is derived, provided the equivalent plant contains the enzymic bleaching material which may be used without subjecting the plant to processes more involved than those hereinbefore described. It is also understood that the agent may be used to decolorize carotin in other relations.

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The final paragraph of the Specification may be stated because it may be of some legal consequence in certain events:

Claims to the bleaching agent and to the process of preparing the same, as distinguished from the process of bleaching flour while preparing the dough, are presented in the copending application for patent, Serial 377,916, filed May 18, 1931 (Patent No. 326,416, patented September 27, 1932).

The Claims of this patent alleged to be infringed, by the defendant Weston alone, are those numbered 1 to 6 inclusive, 10 to 13 inclusive, 17 to 23 inclusive, 25, 26 and 27, and those Claims are said to be infringed in that Weston used the method of bleaching flour and the process of making bread set forth in such Claims; and infringement is also alleged of Claims numbered 7, 8, 14, 15 and 24, in that Weston has made and sold bread of the kind set forth in such Claims. Of the first group of Claims it will, I think, suffice to mention Claims 1, 4, 13, 23, 24, 25 and 27, and they are as follows:

1. The process of making bread characterized by preparing the dough for baking and simultaneously whitening the flour thereof, which process consists in incorporating with unbleached flour in a dough batch a bleaching agent consisting of bean material in amounts of not more than two-thirds of one per cent of the mixture of combined unbleached flour and bean material, then fermenting the dough at a moderate temperature, and baking it.

4. The process of making bread characterized by preparing the dough for baking and simultaneously whitening the flour thereof, which process consists in incorporating with unbleached flour a bleaching agent consisting solely of material from vegetable origin in amounts of not more than two-thirds of one per cent of the total amount of unbleached flour and bleaching agent, then making a dough batch of the mixture, fermenting the dough at a moderate temperature, and baking it.

13. The process of producing bread, white in colour, which comprises adding to unbleached flour or lightly bleached flour a bleaching medium consisting solely of vegetable material containing an active carotin-removing enzyme and effecting the bleaching while the dough is being prepared for baking.

23. The process of preparing improved bread dough white in colour which consists in adding to dough materials including unbleached or slightly bleached flour and other ingredients of a dough batch, a small quantity of carotin decolorizing matter derived from a plant of the bean family, and subjecting the whole to a dough mixing process.

24. Bread, substantially white in colour, made of unbleached flour or lightly bleached flour, to which has been added a small quantity of bleaching material derived solely from a member of the bean family and containing an active carotin-removing enzyme.

25. The process of bleaching flour which process comprises incorporating with the flour to be bleached a carotin decolorizing agent consisting solely of vegetable material, both said agent and the flour being



sufficiently dry to prevent deterioration of the combination during storage, and then mixing with a portion of such combination the necessary moisture and other ingredients required to form a dough batch.

27. The process of making bread from flour having the yellowish tint characteristic of the presence of carotin and simultaneously bleaching the dough comprising incorporating with such unbleached flour and other ingredients to form a dough batch a carotin decolorizing vegetable material having an active bleaching enzyme, and subjecting the dough batch and decolorizing material to high speed mixing.

The second group of Claims, said to be infringed by Weston, are as follows:

7. Bread, substantially white in colour, made of unbleached flour or lightly bleached flour, to which has been added a small quantity of a bleaching agent solely derived from vegetable matter in the form of flour and containing an active carotin-removing enzyme.

8. Bread, substantially white in colour, made of dough comprising unbleached or lightly bleached flour to which one-third per cent. to 2 per cent of bean flour containing an active carotin-removing enzyme has been added.

14. Bread, substantially white in colour, made of unbleached flour or lightly bleached flour, to which has been added a small quantity of bleaching material derived solely from vegetable matter and containing an active carotin-removing enzyme.

15. Bread, substantially white in colour, made of dough comprising unbleached or lightly bleached flour to which one-third per cent. to two per cent. of bean material containing an active carotin-removing enzyme has been added.

24. Bread, substantially white in colour, made of unbleached flour or lightly bleached flour, to which has been added a small quantity of bleaching material derived solely from a member of the bean family and containing an active carotin-removing enzyme.

Patent No. 347,251 relates to improvements in an "Agent for Bleaching Flour and Process of Preparing the Same," and was granted on January 1, 1935, being a reissue of patent No. 326,416, granted in September, 1932, on an application made in May, 1931. This Specification contains substantially all the descriptive matter appearing in the first mentioned patent and that need not be repeated. The Specification however points out that the washing and soaking of the soy-beans, as directed in patent No. 347,252, can be dispensed with and it discloses another method, referred to during the trial as the "dry process," for obtaining the bleaching material with the enzyme in an active state, and which, it is claimed, affords subject-matter for patentable Claims. The Specification states:

In another embodiment of our invention, the washing and soaking methods described in our copending application can be dispensed with. One method of obtaining the material with the enzyme in an active state and by a process commercially practicable, is by treating soy-beans as follows:

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Wash the beans to free them from adhering dirt and immediately dry them at a temperature which must not be over 60 degrees C., for a sufficient length of time to reduce their moisture content to 8% or less. It is preferable that the conditions of operation are so chosen that the temperature may be so controlled that it does not rise over 120° to 130° F. By this drying process the beans are prepared for milling. After drying the beans to the required moisture contents, which may be readily determined by sample analysis, remove the beans from the drying apparatus and grind them to a flour, grinding them in such a way as to cause removal of the hulls as completely as possible by ordinary means, i.e., aspiration. Then further reduce the hull-free material to a fine powder, a granulation similar to wheat flour. The finer the granulation, the better, as long as during the grinding process the temperature of the material does not rise above 60° C. if treated in moist condition. Under these conditions of drying, the activity of the material is not harmed, while higher drying temperatures would seriously impair the bleaching action of the beans.

In the process of grinding and milling, the flour is passed repeatedly through sifting devices, so as to remove any coarse material and to obtain flour of fairly uniform and fine granulation.

The flour thus obtained is then mixed with a filler or diluent so as to reduce the bleaching strength and to improve the keeping qualities of the active bleaching material. It has been found that a good dilution is obtained by mixing one part of bean flour with four parts of another finely ground product, such as processed corn flour formerly known to the trade as "Ceratoose" and now as "Ceratex."

The mixture just described contains 20% of soy-bean material. Of this mixture as little as 0.75% to 100 lbs. of flour in the dough will have a perceptible bleaching effect and this quantity of bleaching material would be considered as the minimum for practical purposes. This would correspond to 0.15% of the bean material itself. The maximum quantity which one could use without imparting an appreciable foreign flavour to bread was found to be about 2.00% of the mixture, which corresponds to about 0.40% of the soy bean material itself.

According to the present invention, the quantity of soy bean material to be used for bleaching purposes is between 0.15% and 0.40%. If less than the minimum quantity is used, then little benefit can be observed and if more is used, the flavour of the bread is too adversely affected.

The Specification then points out that the invention is not limited to the use of soy-bean material alone, and it mentions and discusses in considerable detail other types of vegetable material containing active carotin-removing enzymes, of which examples are given, and the method of preparing the same for use.

The Specification concludes by saying:

All the commercial bean flours investigated have shown little or no bleaching strength. They evidently have been produced in such a way as to harm the bleaching principle contained in the raw beans. No doubt the beans were heated higher than the temperature specified herein, either to produce a more agreeable flavour of the bean flour or to prepare the beans for the extraction of the oil. This is especially true with the commercial soy-bean flours on the market, according to which, even though the beans have a rather high oil content (about 20%), it is necessary to heat the beans to facilitate expelling the oil, and always to a temperature too high for the enzymes to remain active.

Experience has shown that the bleaching agent may be mixed with unbleached flour at the mill, and that the mixture may be kept indefinitely without deterioration, so long as it is maintained in the dry state.

Emphasis is placed in this case, as in copending application, on the fact that the beans are used in the raw state, i.e., they have not been heat treated at a sufficient temperature to destroy the bleaching power.

This is a continuation of the application Serial No. 347,030 filed February 20, 1929, and entitled Bleaching Agent and Process of Utilizing the Same for Bleaching Flour which has resulted in patent No. 319,123.

The patent mentioned in the concluding paragraph was reissued as patent No. 347,252, one of the patents in suit.

The Claims of Patent No. 347,251 numbered 1, 2, 3, 5, 7, 8, 9 and 10 are said to be infringed by both Continental and Weston, by Continental in that it made and sold to Weston a soy-bean product called "Snowtex" embodying this invention, and by Weston in that it used a soy-bean product, believed to be "Snowtex," embodying this invention. Those Claims are as follows:

1. A bleaching agent for whitening flour, comprising a carotin decolorizing agent derived solely from vegetable material and of the nature of that found in the soy bean.

2. A bleaching agent for whitening flour, comprising an all-vegetable carotin decolorizing agent in dry condition which is adapted to decolorize carotin in the presence of warmth and moisture.

3. A bleaching agent for whitening flour, comprising an all-vegetable carotin decolorizing agent active in the presence of warmth and moisture under the conditions of dough mixing.

5. A bleaching agent comprising an all-vegetable carotin decolorizing material in dry condition and which has been treated to remove therefrom a portion of the ingredients native to the vegetable material.

7. A vegetable agent for bleaching flour, which agent consists solely of vegetable material having a strength sufficient to bleach unbleached wheat flour while being formed into dough and when used in amounts too small to perceptibly add its own colour to the mixture.

8. A vegetable agent for bleaching flour which agent consists solely of vegetable material in dry powdered form and derived solely from legumes and having a strength sufficient to bleach unbleached wheat flour while being formed into dough and when used in amounts too small to perceptibly add its own colour to the mixture.

9. A vegetable agent for bleaching flour which agent consists solely of vegetable material in dry powdered form and derived solely from the soy bean and having a strength sufficient to bleach unbleached wheat flour while being formed into dough and when used in amounts too small to perceptibly add its own colour to the mixture.

10. A vegetable agent for bleaching flour which agent consists solely of vegetable material from which some natural ingredients have been removed and characterized by ability to bleach unbleached wheat flour while being formed into dough and when used in quantities too small to affect the flavour of the product.

The next patent to be mentioned is that numbered 345,532, which issued in October, 1934, on an application

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made in October, 1932. As I understand it, while this application was pending a ruling for division was made by the Patent Office and this resulted in the patent just mentioned, and also patents numbered 345,533 and 345,534, the first of which is not sued upon in either of the actions here. Speaking generally, patent No. 345,532 is directed to the use in a bakery of a bleaching product prepared from soy beans by the so-called "dry process." The exact title given this patent is "Process of Making Bakery Products and Bleaching the Flour Thereof." It may be desirable to recite from this Specification the following passages even though they are much the same as those quoted from the last mentioned patent, No. 347,251.

Wash the beans to free them from adhering dirt and immediately dry them at a temperature which must not be over 155° F., for a sufficient length of time to reduce their moisture content to 8% or less. It is preferable that the conditions of operation are so chosen that the temperature may be so controlled that it does not rise over 140° F. to 150° F. By this drying process the beans are prepared for milling. After drying the beans to the required moisture content, which may be readily determined by sample analysis, remove the beans from the drying apparatus and grind them to a flour, grinding them in such a way as to cause removal of the hulls as completely as possible by ordinary means, i.e., aspiration. Then further reduce the hull-free material to a fine powder, a granulation similar to wheat flour. The finer the granulation, the better, as long as during the process the temperature of the material does not rise above 155°. Under these conditions of drying, the activity of the material is not harmed, while higher drying temperatures would seriously impair the bleaching action of the beans. By this latter method the vegetable bleaching material is not subjected to any wetting action after granulation is begun or after the vegetable itself is modified from its original shape. As applied to soy beans, the beans may be wet or otherwise treated in the process of cleaning them but after being cleaned the material is not further moistened at any stage to the very completion of the bleaching agent.

In the process of grinding and milling, the flour is passed repeatedly through sifting devices, so as to remove any coarse material and to obtain flour of fairly uniform and fine granulation.

The flour thus obtained is then mixed with a filler or diluent so as to reduce the bleaching strength and to improve the keeping qualities of the active bleaching material. It has been found that a good dilution is obtained by mixing one part of bean flour with four parts of another finely ground cereal product such as process corn flour formerly known to the trade as "Ceratose" and now as "Ceratex."

The mixture just described contains 20% of soy bean material. It has now been proved that of this mixture as little as 0.3125% to 100 lbs. of flour in the dough will have a perceptible bleaching effect and this quantity of bleaching material would be considered as the minimum for practical purposes. This would correspond to 0.0625% of the bean material itself. The amounts which one could safely use without imparting an appreciable foreign flavour to bread was found to be about 2.00% of the

mixture, which corresponds to about 0.40% of the soy bean material itself. Above that amount the agent's flavour appears noticeable and quality is thus lowered.

According to the present invention, the quantity of soy bean material to be used for bleaching purposes is between 0.0625% and 0.40%. If less than the minimum quantity is used, then little benefit can be observed and if more is used, the flavour of the bread is too adversely affected.

The last step of mixing or dough making just mentioned is preferably done in the presence of air or oxygen in a modern high speed mixer, although mixers having slower speeds may also be used, but with somewhat less satisfactory results.

The Claims of patent No. 345,532 numbered 1 to 5 inclusive are alleged to have been infringed by Weston only, in that it used the method of bleaching flour and the process of making or producing bread set forth in such Claims, and they are as follows:

1. A process of making bread comprising incorporating with unbleached or lightly bleached flour to further bleach it and with other ingredients to form a dough batch, a carotin-decolorizing agent comprising a vegetable material in proportions of not less than approximately 0.0625% by weight to the weight of the flour.

2. A process of making bread comprising incorporating with unbleached or lightly bleached flour to further bleach it and with other ingredients to form a dough batch, a carotin-decolorizing agent comprising a vegetable material in proportions of not less than approximately 0.0625% to not more than approximately 0.30% by weight to the weight of the flour.

3. A process of making bread comprising incorporating with unbleached flour and other ingredients to form a dough batch, a carotin-decolorizing agent comprising a raw comminuted vegetable material which has been maintained dry from the time of comminution until when used in the dough batch.

4. A process of making bread comprising incorporating with unbleached flour and other ingredients to form a dough batch, a carotin-decolorizing agent comprising a raw vegetable material in powder form and which has been maintained dry from the time of comminution until when used in the dough batch.

5. A process of making bread comprising incorporating with unbleached flour and other ingredients to form a dough batch, a raw carotin-decolorizing agent derived solely from vegetable origin and in the form of a powder having a moisture content of not over 8% and which has been maintained dry from the time of comminution until when used in the dough batch.

The last patent to be mentioned is that numbered 345,534, which issued in October, 1934, on an application made in August, 1933, and resulted from a Patent Office ruling for division as already explained. The title given to this invention is "Agent for Bleaching Flour," for use in the manufacture of dough, and is directed to the preparation of a flour bleaching agent according to the process described in

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patent No. 345,532, the so-called "dry process." It is unnecessary, I think, to refer to any portion of the Description of the Specification.

The Claims 1 to 8 inclusive, of patent No. 345,534, are alleged to have been infringed by Continental in that it made a soy-bean product embodying the invention described and claimed in this patent, and has sold the same under the name of "Snowtex" to the defendant Weston and others; and it is also alleged that the defendant Weston has infringed Claims 1, 2, 5 and 6 of the same patent in that it has used a soy-bean product embodying the invention therein claimed, and which product is said to be the same as that sold by Continental under the name of "Snowtex." As the Claims are small in number it will be convenient to mention all of them. They are as follows:

1. As a new ingredient in the manufacture of dough, a raw vegetable carotin-decolorizing agent in powder form and unwetted from the time of being made into powder.

2. As a new ingredient in the manufacture of dough, a raw comminuted vegetable carotin-decolorizing agent and unwetted since comminution.

3. As a new ingredient in the manufacture of dough, a raw carotin-decolorizing agent derived solely from vegetable origin and dried at a temperature of not over 155° F. to a moisture content of not more than 8%.

4. As a new ingredient in the manufacture of dough, a raw comminuted carotin-decolorizing agent derived solely from vegetable origin and dried at a temperature of not over 155° F. to a moisture content of not more than 8%.

5. As a new ingredient in the manufacture of dough, a raw vegetable carotin-decolorizing agent in powder form and unwetted from the time of being made into powder, said carotin-decolorizing agent containing enzymic material operative to decolorize carotin under all conditions of dough mixing.

6. As a new ingredient in the manufacture of dough, a raw comminuted vegetable carotin-decolorizing agent and unwetted since comminution, said carotin-decolorizing agent containing enzymic material operative to decolorize carotin under all conditions of dough mixing.

7. As a new ingredient in the manufacture of dough, a raw carotin-decolorizing agent derived solely from vegetable origin and dried at a temperature of not over 155° F. to a moisture content of not more than 8%, said carotin-decolorizing agent containing enzymic material operative to decolorize carotin under all conditions of dough mixing.

8. As a new ingredient in the manufacture of dough a raw comminuted carotin-decolorizing agent derived solely from vegetable origin and dried at a temperature of not over 155° F. to a moisture content of not more than 8%, said carotin-decolorizing agent containing enzymic material operative to decolorize carotin under all conditions of dough mixing.

Considerable confusion ensues here from the fact that there are involved four patents, all of which are closely related to one another. This transpires largely because at some stage divisional applications were required on the direction of the Patent Office, and the divisional applications here directed would appear to me to have been unnecessary, in part at least. However, I do not think a patentee is to be prejudiced by enforced divisional applications, made on the ground that an application describes and claims more than one invention. Sec. 37 of the Patent Act provides that in an action or other proceeding a patent is not to be deemed invalid by reason only that it has been granted for more than one invention, and it must follow, I think, that if patents are granted on divisional applications directed by the Patent Office none of them shall be deemed invalid, or open to attack, by reason only of their numbers. Then, some confusion arises from the fact that two of the patents in question are reissued patents. The reasons for the reissue of those patents have been satisfactorily explained to me and I do not propose discussing the grounds upon which they were reissued. I should like, however, to repeat a suggestion which I have made many times in the past, namely, that the provisions of the Patent Act in respect of the reissue of patents should be abandoned and suitable provisions substituted therefor enabling a patentee to apply for amendments to his patent, such, for example, as is to be found in the English Patents Acts. A reissue of a patent seems to suggest to rival patentees, and others, improper motives for the reissue, and other grounds of attack, which too frequently are trifling. If some procedure such as I suggest were adopted, and amendments to patents were permissible upon a formal application to, and after a hearing by, the Commissioner of Patents, of which due notice was given to the public, it would, I think, be in the interest of all concerned.

Disregarding for the moment such defences as anticipation, the adequacy or inadequacy of the Descriptions set forth in the several Specifications, the validity of particular Claims, and the construction and application of s. 40 of the Patent Act, I may first consider the question as to whether the disclosures of Haas contain any real or proper subject-matter for letters patent. Late in 1927, Haas, then the head chemist in the bakery laboratories of the W. E.

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Long Company of Chicago, was engaged by the plaintiff company to conduct research work in connection with the flour products produced by it, and upon this service Haas entered on January 1, 1928. Prior thereto Haas had occasion to study the effects which chemical bleaching had upon flour, and certain bakery problems arising therefrom, but no flour bleaching agents, other than purely chemical bleaching agents, were apparently then known or in use. Early in his research work in the service of the plaintiff, and while searching for a composition that would improve the quality and flavour of bread, Haas discovered while using a small quantity of fine flour ground from the soy-bean, with bleached or unbleached wheat flour, that the former contained something in the way of a bleaching enzyme, which had the effect of whitening the flour. The soy-bean had for a long period been grown and used in China, Manchuria and Japan, for various food purposes, but the evidence, which need not be reviewed, makes it quite plain that soy-bean flour had never been used anywhere, in any form, for the bleaching of flour, or for producing a loaf of white bread. It was in March, 1928, a date not disputed, that Haas discovered that by introducing a small quantity of yellowish soy-bean flour into a mixture of dough, made from unbleached flour, it would whiten the dough, and produce a loaf of bread that was white in colour, and in other respects highly satisfactory. In his experimental work he found that commercial soy-bean flours on the market possessed little or no bleaching property, but he also found that by preparing a soy-bean flour, according to the processes described in his Specifications, he could produce a flour-bleaching agent from the soy-bean, without injuring or destroying the active bleaching property therein. Haas therefore claims to have made a notable discovery, and by substantial experimental and research work to have invented and disclosed a new manufacture, and a process or processes, or means, of giving commercial utility to his discovery. It is claimed that the bleaching agent disclosed by Haas is superior to any chemical bleaching agent, but whether or not this superiority has been established is unimportant because in any event it is an entirely different bleaching agent. This bleaching agent is also claimed to have the novel advantage that the baker may carry out the bleaching of flour or dough in his own



plant, to the extent he desires, and this claim has been fully established; this bleaching agent may also be mixed with flour in a dry state at any time after the flour is made, and the mixture may be stored indefinitely without deterioration, for the reason that it is only active in the presence of warmth and moisture. It is also claimed that the bleaching of flour or dough according to the teachings of Haas has beneficial effects upon bread baked therefrom and there is considerable evidence to support that claim. It has been shown that the flour bleaching agent disclosed by Haas has been quite widely adopted, though it has by no means entirely displaced chemical bleaching agents. In 1939 the plaintiff sold soy-bean flour as a bleaching agent, prepared according to Haas, in sufficient quantities to make three and a half million loaves of bread per day, and its use would appear to be extending. No useful purpose is to be accomplished by a comparison of the quantities of the Haas bleaching agent used by flour mills or bakers with that of the chemical bleaching agents.

Then, pertaining particularly to the question of novelty, there is the evidence of Dr. Horvath, of the University of Delaware, a scientist who has devoted many years of study and research work to the soy-bean. He testified that no one before Haas ever recognized the existence of a bleaching enzyme in the soy-bean. Dr. Sumner, of Cornell University, whose scientific work since 1917 has been devoted to enzymes, and who, I am led to believe, is a recognized authority on enzymes and the author of text books on that subject, testified that no one before Haas had discovered the existence of a bleaching enzyme in the soy-bean, though many other enzymes were known, and he regarded it as a notable discovery. In respect of the question of the utility of Haas we have the evidence of Dr. Harcourt, the head of an Institute in Guelph, Ontario, sponsored by the Government of Ontario, the work of which is devoted to the scientific baking of bread; the evidence of five or six persons engaged in the bakery trade in Canada in a large way; and the evidence of Mr. Wilson of Clarksburg, West Virginia, U.S.A., who has had over forty years of experience in the bakery trade, all of whom spoke of the advantages of flour bleaching according to Haas over chemical bleaching. It is unnecessary to review

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in any detail all this evidence. There is no room for doubting the utility of Haas as a bleaching agent, and in fact this was admitted by counsel for the defendants.

That there is invention in the bleaching agent disclosed by Haas, and his process or processes of producing the same, is not, I think, subject to any serious doubt, assuming for the moment that anticipation is not to be found in any of the prior art cited, and this will be considered presently. I think Haas undoubtedly made an important discovery, and as the result of substantial and original research and experimental work he has disclosed a process or processes, or means, for translating his discovery into practical and useful ends, something that was not, I think, done before. The bleaching of flour or dough, and the production of a white loaf of bread, was and is being successfully attained by the use of the bleaching agent prepared according to the process, and by the means, described by Haas. This was, I think, something novel and useful, particularly because of its adaptability for use in bakeries as already mentioned, and I do not think there is any fair ground upon which it should be denied the merit of a patentable invention, unless, as I have already stated, anticipation of it has been definitely established. There would not seem to be any room for saying that Haas was something obvious. In order that a thing shall be "obvious," it must be something that would directly occur to some one who was searching for something novel, a new manufacture or whatever it might be, without the necessity of his having to do any experimenting or research, whether the research be in the laboratory or amongst literature. Haas discovered the existence of a flour bleaching enzyme in the soy-bean, he disclosed a process, and the sequence of the various steps in that process, by which a bleaching agent could best be made therefrom for commerce, and the property that it will have when so made or manufactured, and none of these things can, I think, be said to have been obvious.

I may now refer to certain prior art cited by the defendants in the way of anticipation of Haas. There are only two patents out of a lengthy list that need be mentioned, and in fact those would appear to be the only prior publications seriously relied on by Mr. Gowling. First, there is the United States patent, No. 1,427,645, granted to Satow,

in 1922. It is said that the object of this invention is "to provide vegetable proteid substances of improved quality and a simple, efficient and economical process of manufacturing the same from vegetable substances, such as cereals, leguminous products or other material for food purposes, or for use in the manufacture of celluloid-like substances, linoleum-like substances, lacquer, varnish, artificial rubber, artificial leather, and the like." Satow takes the soy-bean as a proteid containing substance, and he suggests a certain treatment of that bean, drying, rolling, the removal of the oil preferably by a solvent, and so on, all for the declared purpose of producing refined vegetable proteids. He was not attempting to deal with any problem concerned with the bleaching of flour, or the bread baking industry, or with the object of accomplishing any end or result which might be regarded as novel or useful in the baking industry. I cannot think that this patent has any real association with Haas, or with any of the objects which Haas had in mind and disclosed, and, I think, it is altogether irrelevant here. As has been laid down time and again, any information as to the alleged invention given by any prior publication must, for the purpose of practical utility, be equal to that given by the subsequent patent. The latter invention must be described in the earlier publication that is held to anticipate it, in order to sustain the defences of anticipation. It must be shown that the public have been so presented with the invention that it is out of the power of any subsequent person to claim the invention as his own. See *Fada Radio Ld. v. Canadian General Electric Co.* (1). By this test, Satow fails as an anticipation.

The next patent to be mentioned is the British patent, No. 186,571, granted to Van Der Lande, in 1923. This invention, as is stated, "relates to the process of treating flour or meal with peroxides which after being mixed with the flour or meal are decomposed," and it is described as "a process for conserving meal and improving its baking qualities and colour." It appears to me that what Van Der Lande discloses is nothing more than the bleaching of flour by a process which I referred to very early in this judgment, the Novadel process, a chemical bleaching of flour, which was well known before Van Der Lande. Haas refers to this process of flour bleaching in all of his

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Specifications, that is, bleaching with benzoyl peroxide, and he points out its disadvantages. Van Der Lande is, I think, fundamentally a flour bleaching by a purely chemical process, or what is generally described as a chemical process, as distinguished from the enzymic vegetable bleaching material described and claimed by Haas. Van Der Lande describes his invention as a process for treating flour or meal with peroxides, and one of his Claims is for the process of treating meal flour by means of peroxides. There is no mention whatever of the soy-bean as a source for his bleaching material, or of the existence therein of such an enzyme as would decolorize the carotin of flour, if mixed with the flour at the mill, or in the bakery in the preparation of dough for the baking of bread, and therefore it seems to me that whatever bleaching agent is disclosed by Van Der Lande, whatever the process of producing it, and whatever bleaching results it effects, it is not the bleaching agent that Haas disclosed and claimed. In any event, Van Der Lande fails as an anticipation if tested by the principle laid down in the *Fada* case, to which I have already referred. No one, I think, could read the Van Der Lande Specification and say that it describes Haas, or that it presented to the public the invention described by Haas. At most it is but a vague adumbration of the successful idea of Haas, and as has been said one must not look at prior documents with an eye which has been sharpened by the patentee. The step from Van Der Lande to Haas could not, in my opinion, be deemed to be an obvious one, and so far as I know Van Der Lande never went into use, which in the circumstances is an impressive fact. I think therefore that Van Der Lande cannot be construed as an anticipation of Haas. If it is not precisely the same process of flour bleaching known as Novadel, it is certainly not the invention described and claimed by Haas, and cannot therefore be an anticipation of the latter.

A French patent, granted to the plaintiff, and published on May 31, 1932, was cited as having described the invention disclosed in two of the patents in suit, Nos. 345,532 and 345,534, both of which were filed on October 23, 1934, more than two years subsequent to the date of publication of the French patent, and therefore subject to the provisions of s. 27 (2) of the Patent Act. The French patent

describes a bleaching agent made from soy-beans, in accordance with the wet process so-called, and as described by Haas in the Specifications here in question. Mr. Carson contended that the bleaching agent prepared according to the dry process so-called, and described in the two Canadian patents just mentioned, represents a patentable improvement over the so-called wet process, and that the same is independently claimed as a new and useful process in the preparation of his bleaching agent, and that therefore s. 27 (2) of the Patent Act is not applicable. Mr. Gowling's contention was that the French patent describes the same invention as is described in the two patents in suit which I have mentioned. This contention rests on the proposition that there is no patentable distinction between the Claims based on the wet processing of the soy-beans and those on the dry processing of the beans, and it was contended by Mr. Gowling that the French patent specifically or inferentially includes both the wet and dry process of preparing the soy-beans. This the plaintiff does not assent to. Any conclusion upon this point is one to be reached upon a construction of the Specifications and Claims involved, which I shall have to consider later when considering the Claims generally, and there I allow this matter to stand for the present.

I may now turn to the question of infringement, and this does not, I think, require any lengthy discussion, apart from any particular questions arising as to the form or scope of the Claims in issue. In January, 1936, Mr. Stethem, the President of Continental, commenced carrying on business under the name of Continental Soya Company, and in this business he dealt in soy-bean products. This business was taken over by the defendant Continental in 1937, and in August of that year it commenced the production and sale of a flour bleaching agent which was marketed under the name of "Snowtex," as, I think, did its predecessor for a short time. At the time of the commencement of the production of Snowtex, Continental, it is alleged, had on hand a quantity of soy-bean flour, in flake form, which had been purchased from an American concern known as Archer, Daniels Midland Company (hereafter referred to as "Archer"), with the view, it was said, of the same being sold to, and used by, concerns engaged in the brewing trade. In a printed circular issued by

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Archer there is prominent display of the fact that their product "soy-bean brew flakes provide the finest foam quality," and that it contained "valuable enzyme," but there is no suggestion that it is a flour bleaching enzyme, which, I assume, would be of no special interest in the brewing trade.

Then, so it is said, Mr. Stethem, or some one associated with Continental, "concluded," or "felt," that this flaked soy-bean flour, possessed some flour bleaching property, a bleaching enzyme, and would for this reason, and otherwise, be useful in the production of bread. Mr. Stethem was unable to explain satisfactorily when or how he came to entertain the belief that this soy-bean flour in flake form might be useful or made useful as a flour bleaching agent or otherwise, in the baking trade. It was not by reason of his own previous business experience, or by deductions reached from a study of the scientific literature relative to the flour bleaching art, or bleaching enzymes. There was a vague suggestion by Mr. Stethem that in the production of Snowtex, disclosures made in some patent granted to one Satow were followed, not under licence, but this evidence is not at all impressive. The evidence shows that Archer cleaned, cracked and flaked the soy-beans, removed the oil therefrom, and dried the same with care so as not to injure the sensitive enzymes—no doubt having in mind the bleaching enzymes—by keeping the drying temperatures within a certain range mentioned by Mr. Stethem.

In any event, it first occurred to Mr. Stethem in August, 1937, to manufacture, from this soy-bean flaked flour, a commercial product that might be used as a flour bleaching agent in the bakery trade, and it is quite clear that he understood that this product, in powder form, wetted or unwetted, when mixed in dough or sponge in the bakery, had the effect of bleaching flour, thus giving a white loaf of bread. And he understood that Archer, in the preparation and processing of its flaked soy-bean flour sold to Continental, was careful to preserve in active form the bleaching properties that it contained, that is, that the amount of heat generated and employed in the process of drying the same would not injure the sensitive enzymes therein, which Mr. Stethem no doubt understood to be bleaching enzymes. This was communicated to him by Archer. And it is also clear that in the sales of Snowtex to the baking trade,

printed instructions regarding the form of the use of Snowtex were furnished by Continental, and this substantially corresponds with the directions furnished by the plaintiff to its customers in the baking trade, in the use of Wytase. The flaked soy-bean flour purchased from Archer is, I should add, reduced to a fine powder by Continental, and in this form sold as a bleaching agent to the baking trade. That Snowtex has a bleaching effect upon unbleached flour is not open to dispute. I should also add that Mr. Stethem learned of Wytase, the plaintiff's flour bleaching product, early in 1932, and that it was being used as a flour bleaching agent. It is hardly open to serious controversy but that Wytase and Snowtex are substantially the same product, and produced primarily for the same purpose, namely, as a bleaching agent, and that they are both derived from the same source and for all practical purposes by the same process.

Upon the question of infringement little need be said concerning the other defendant. Weston commenced the use of Wytase in its bakeries in May, 1937, but in September of the same year it discontinued the same and commenced using Snowtex, the reason assigned for this transfer of patronage from the plaintiff to Continental being that Snowtex was to be purchased at a lesser cost, and that a much smaller quantity of Snowtex did the relative work of Wytase. The evidence satisfies me that Wytase and Snowtex are practically identical products, even though the quantity of each used in the making of dough or sponge differs; this distinction I do not regard as of importance in respect of the issues of either subject-matter or infringement. I might mention the fact that Haas suggests the use of a certain quantity of corn flour or other ground cereal product, as a filter or diluent, which is not employed in the preparation of Snowtex, but Haas claims the preparation of his bleaching agent with or without the use of such a diluent. Snowtex was used by Weston in a dry form, in its bakeries, in the dough or sponge, the latter being fermented at a moderate temperature and of the order prescribed by Haas. I might add that Weston ceased the use of Snowtex pending the determination of this litigation.

I think there can be no doubt but that Snowtex is, for all purposes with which we are here concerned, practically

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the same bleaching agent as Wytase; it is used in bakeries in powder form, in practically the same way and for the same ends as Wytase, that is, primarily for the production of a white loaf of bread, but also for any other beneficial qualities it may possess in relation to the production of bread. Any variations in the constitution of the two bleaching products, or in the process of making them, or in the method of using them in the baking of bread, do not, in my opinion, afford any defence in an action for the infringement of Wytase, which I hold to possess subject-matter for a patent.

I turn now to grounds of attack of another character, raised against the patents in suit, and which Mr. Gowling appraised as the most important and substantial of the defences raised in these actions. This involves the construction of s. 40 (1) of the Patent Act and its application to the particular facts appearing here, a provision which affords fertile ground for controversy not easily or perhaps satisfactorily determined. Sec. 40 (1) reads as follows:

40. (1) In the case of inventions relating to substances prepared or produced by chemical processes and intended for food or medicine, the specification shall not include claims for the substance itself, except when prepared or produced by the methods or processes of manufacture particularly described and claimed or by their obvious chemical equivalents.

Sub-s. (2) may be of some assistance in the construction of sub-s. (1), and possibly of importance in other respects, and may therefore be recited. It reads:

(2) In an action for infringement of a patent where the invention relates to the production of a new substance, any substance of the same chemical composition and constitution shall, in the absence of proof to the contrary be deemed to have been produced by the patented process.

The specific grounds for defence raised under s. 40 (1), may be stated as follows: (1) That the flour bleaching material disclosed and claimed by Haas is a substance prepared by a chemical process; (2) that this substance is one "intended for food" within the meaning of s. 40 (1), even if not primarily prepared or produced for consumption as a food; and (3) that the Claims for the processes for producing the bleaching substance are invalid because they are not described and claimed in conformity with the requirements of s. 40 (1), and that as a consequence of this all the patents in suit fall. I understood Mr. Gowling to con-



tend that as the bleaching substance is one produced by a chemical process and intended for food, any such process must be particularly described and claimed, and if the substance is claimed any such Claim must appear in the same Specification as describes the process, and is to be limited to the process of manufacture described and claimed. If the premises stated by Mr. Gowling are well founded, then, in the main, his contentions are rather formidable ones.

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During the discussion upon the construction of s. 40 (1) by counsel reference was made to the corresponding provision of the English Patents Acts, and to certain decisions of the Law Officers of England in respect of patent applications which involved the construction of the English section. It will be desirable therefore to refer to the provision of the English Patents Acts, as it was at the time material here, and when such decisions were rendered. That section, 38A (1), then read :

38A. (1) In the case of inventions relating to substances prepared or produced by chemical processes or intended for food or medicine, the specification shall not include claims for the substance itself, except when prepared or produced by the special methods or processes of manufacture described and claimed or by their obvious chemical equivalents . . .

This provision of the English Patents Acts has since been amended by striking out the word "special" immediately before the words "methods or processes of manufacture," and by striking out the word "claimed" in the last line of that section and substituting therefor the word "ascertained." In 1932, s. 38A (1) was further amended, and now it reads (leaving in brackets the words earlier deleted) as follows:

38A(1). In the case of inventions relating to substances prepared or produced by chemical processes or intended for food or medicine, the specification shall not include claims for the substance itself, except when prepared or produced by the (special) methods or processes of manufacture particularly described and (claimed) ascertained or by their obvious chemical equivalents.

Provided that in relation to a substance intended for food or medicine a mere admixture resulting only in the aggregation of the known properties of the ingredients of that substance shall not be deemed to be a method or process of manufacture.

Presently, the main distinction between the Canadian s. 40 (1) and the first paragraph of the English s. 38A (1) is that the former contains the word "and" before the words "intended for food or medicine" instead of the

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word "or" as in the English section, and so far as I can ascertain the Canadian section was always thus distinguished from the English section. In any event, I think it may be assumed that the word "and" was adopted instead of the word "or" after deliberation, because the Canadian section was manifestly copied from the English section. The consequence of the use of the word "and" instead of "or" is that the Canadian section 40 (1) relates only to substances prepared or produced by chemical processes when intended for food or medicine, whereas it would appear that all substances produced by chemical processes fall within the ambit of the English section, as also do substances intended for food or medicine whether produced by chemical processes or not, and I think that was so held by the Law Officer in the *Application of W.K.I., and W. Ld.*, (1). Consequently the English section has a much wider application than the Canadian section which relates only to substances prepared by chemical processes when intended for food or medicine. I emphasize this distinction because it may have some bearing in the construction of s. 40 (1) of the Canadian Patent Act.

It is usually of some interest and assistance to know, if one can, what was the object sought by any particular enactment, and if the purpose of the enactment of the English section were known that would probably indicate the general purpose of its reproduction in the Canadian Patent Act, with the few variations which I have pointed out. I find the purpose of the English enactment to be stated by Law Officers of the Crown in some reported English patent cases. In the matter of the *Application of G. & H.*, (2), the Law Officer, Sir Thomas Inskip, S.G., on the hearing of an appeal from the decision of the Assistant Comptroller said: "Section 38A (1) was enacted for a purpose and for reasons which are very familiar, and which have often been explained to me in connection with the increasing number of claims for products, and it was intended to prevent claims for a substance itself unless there is some feature connected with it which is described in words which I have often had to consider, and are rather difficult, namely, the words 'special method or process of manufacture'." Again, in the matter of the *Application of N.V.I.*, (3), the same Law Officer said: "This

(1) (1922) 39 R.P.C. 263.

(2) (1925) 42 R.P.C. 501.

(3) (1925) 42 R.P.C. 503.

enactment has been repeatedly considered by Law Officers, and it is well known that it was designed to prevent the appropriation by a patentee of certain substances in such a way as to preclude other explorers in the same field from devising improvements in the preparation or the quality of the substance in question," and in the same case he said "Section 38A (1) is not, as I read it, designed to prohibit or restrict bare process claims, and if every claim for a process were to be regarded as a claim for a substance prepared or produced by the process claimed, the scope of section 38A (1) would be unduly extended." A further explanation is to be found in the case of *Sharpe & Dohme Inc. v. Boots Pure Drug Co.*, (1), wherein Lord Hanworth, referring particularly to the word "special," as found in the English section, said: "The section was intended to give the security of a patent to substances in respect of which a method or process was described in the Specification, that has some intrinsic characteristics which are the invention of the inventor and for which a patent may be properly and legitimately claimed and granted." Generally, the purpose of the enactment would therefore seem to have been to limit the Claims for substances produced by a chemical process, or substances intended for food or medicine, to the process of manufacture described and claimed, but it was not designed to prohibit or restrict bare process Claims. This explanation of the purpose of the English enactment seems to be a reasonable one, although it is not absolutely clear to me that it effected any real change in the law. Generally, this explanation would apply to the Canadian enactment. Neither the English nor the Canadian section was designed for the purpose, as one might at first think, of maintaining standards of purity in food products or for the protection of the consumer of certain food products, because other legislation had anticipated any such need, in Canada at least. As I have already stated, section 40 (1) of the Patent Act is to be construed as meaning that in the case where a substance is produced by a chemical process, and is intended for food or medicine, the substance can be claimed only when prepared or produced by the process of manufacture described, and it would also seem that the process

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I was referred by counsel to quite a number of decisions rendered by Law Officers in England, on appeals by applicants for patents from rulings made by officials of the Patent Office, amending or refusing to accept Applications, which appeals involved the construction of s. 38A (1), and any comments I have to make thereon may conveniently be made at this stage. I have considered these decisions, and several others of the same character which were not cited before me, but I have been unable to find them of any practical assistance in a construction of s. 40 (1) of the Patent Act, or in their application to the facts of the cases before me. In the main they relate to the meaning to be given the word "special" in the English section, and whether or not the statement of the Claims there in question complied with the requirements of that section. In some of these cases it was decided that what was claimed as a process was in fact a Claim for a product, or what was claimed as a product was merely a Claim for a process, or what was claimed as a process was not a "special" one within the meaning of s. 38A (1), all of which were questions of fact, and therefore the questions at issue there were resolved upon the facts appearing in the particular case. In other cases it was held, as a pure question of fact, that the substance in question was one prepared by a chemical process, or that the substance was not in fact a new manufacture, again depending upon the particular facts of the case. The conclusions reached by the Law Officers in all these cases were founded on the facts appearing in, or to be inferred from, the particular Application in question, and they are not, I think, of assistance in the matters I have to decide, and, of course, they are not in any event binding upon me. Moreover, these decisions were not rendered in infringement actions, which, I think, is of importance in a consideration of the cases before me for decision. I have concluded therefore to refrain from any extended discussion of these cases.

Whether the bleaching material here in question is a "substance" prepared or produced by a chemical process is one of the issues which I have to determine, and it pre-

sents some difficulties. It will be desirable therefore to examine in some detail the process of manufacture of the flour bleaching material described by Haas, even if I repeat what has been already recited from the Specifications in question. This may be of assistance also in a consideration of the Claims sued upon. Haas discovered that the soy-bean contained a bleaching enzyme but this discovery of itself would not entitle him to a patent of invention, and, of course, the soy-bean in its natural state could not be used as a flour bleaching agent, in the flour mill or in the bakery. By experimental work in his laboratory Haas demonstrated that a soy-bean flour could be produced commercially while at the same time preserving therein the sensitive bleaching enzyme of the soy-bean, which, I think, it is agreed might easily be destroyed in the production of the soy-bean flour by an application of excessive heat. This bleaching enzyme Haas found to be absent in the commercial soy-bean flours then on the market, and which enzyme, he suggests, had in some way been destroyed. In one process of producing his soy-bean flour he directs that the beans be soaked in water of approximately room temperature, for twelve to forty-eight hours, and at the end of that period that the beans be well washed with two or three changes of fresh water. At this point the beans will have swelled to about three times their original size. After draining off the wash water the beans are then ground in a mill to a paste or sludge, and this paste or sludge may be thoroughly mixed with cornstarch or corn flour, or other cereal flour, to increase its water absorbing capacity. The resulting mixture, a rather dry or friable mass, is then dried at a temperature not exceeding 60° C. in order not to injure the enzyme, and afterwards ground to a fine powder, as fine as the flour into which it ultimately enters. Then he describes and claims another process, which hitherto I have called the "dry process." In this process the soaking of the beans is dispensed with, and the beans are washed merely to free them of adhering dirt. They are then dried at a temperature not exceeding 60 degrees C. for a sufficient time to reduce their moisture content to 8 per cent or less. The beans, after being thus prepared for milling, are removed from the drying apparatus and ground to a flour in such a way as to cause removal of the hulls, and this flour is then further reduced to a fine

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powder, a granulation similar to the wheat flour. After the beans are cleaned the bleaching material is not further moistened at any stage to the very completion of the bleaching agent. In this process there may be added to the fine powder flour a filter or diluent, in stated proportions, so as to reduce the bleaching strength and to improve the keeping qualities of the active bleaching material. Other methods of manufacture are suggested by Haas. Now the bleaching agent thus produced is the practical embodiment of the discovery of Haas, it is the substance for which he claims a patent of invention. It is the substance which effects a practically complete decolorization of the characteristic colour of unbleached flour, and which is sold in the market as a flour bleaching agent, chiefly for use in the bakeries as explained. This was the substance, or its equivalent, that was sold by Continental to Weston, and used by Weston in its bakeries. However, this bleaching substance, in dry form, might be mixed with unbleached flour at the mill, or elsewhere, but it would effect no decolorization of the yellow colour of that flour, because as I shall later point out, as Haas does in his Specifications, the bleaching agent remains inactive in the absence of warmth and moisture.

The major difficulty in construing s. 40 (1) arises from the employment therein of the words "chemical process," without attempting to define the term, or without limiting its application. A statutory use of the words "substances prepared or produced by chemical processes and intended for food" immediately suggests the inquiry as to whether the Legislature, or the draftsman, intended those words to be construed in the sense which the chemist or physicist might construe them, or whether they are to be construed in what I might call the popular sense, which would give them a much narrower meaning. Practically every substance intended for food, may be said to have been either prepared or produced by a chemical process, as is all living matter, but did the Legislature approach the enactment of s. 40 (1) according to the conceptions of theoretical chemistry and thus open up a field of interminable controversy, for a purpose concerned with the administration of the law relating to patents, the necessity for which, in my opinion, is open to serious debate? In the scientific sense it is probably impossible to classify phenomena

in a rigorous manner, because border-line cases always exist and natural phenomena refuse to allow themselves to be classified into arbitrarily defined groups. I should think it doubtful if it were possible to decide always, with entire satisfaction, what is a chemical process and what is a non-chemical process. In the strict sense virtually everything involves a chemical process and therefore if this viewpoint is carried to the limit s. 40 (1), which purports to distinguish between chemical and non-chemical processes in preparing or producing substances intended for food or medicine, becomes almost meaningless.

The evidence, and the text books to which I was referred, would seem to make it clear that what occurs in the bleaching of flour is the oxidation of the carotin pigments therein. The change that occurs is in the one material or element, that is to say, the carotin in the flour is decolorized, the flour is not otherwise changed. By definition an enzyme, such as we are here concerned with, is a type of catalyst which speeds up a chemical reaction or change, but it does not cause a reaction to take place which would not occur to some extent at least in its absence. Catalysts in general may be considered as substances which hasten or retard chemical reactions or changes but which undergo no substantial change themselves, that is to say, in general catalysts come out of a reaction in the same form in which they enter it. Heat may be considered a catalyst in that one may hasten a chemical reaction or change by the application of heat, or one may retard the same reaction by a process of cooling. The bleaching of flour is primarily a bleaching by atmospheric oxygen, and if a bleaching enzyme is introduced into flour, in any particular form, it is for the purpose of speeding up the process of oxidation which was proceeding in any event, causing it to occur in a short time instead of over a lengthy period. The enzyme discovered by Haas, when employed as a catalyst, functions to speed up the oxidation of the carotin of flour. The principal question for decision here then is whether a soy-bean flour bleaching substance, a natural vegetable material, such as Wytase, employed to hasten the bleaching of flour, without the addition or aid of any chemical substance, can be said to be a substance prepared or produced by a chemical process within the meaning of s. 40 (1).

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I am unable to accept the view that the flour bleaching material of Haas is a "substance" prepared or produced by a "chemical process," and I think it is the only "substance" here to which s. 40 (1) could have any application. It is a vegetable material containing a bleaching enzyme, prepared mechanically and without the intervention or aid of any substance of a chemical nature intended to effect any particular reaction, and is not, I think, a material prepared by a method which might fairly be said to involve a chemical process set in motion by human agency; which, I think, the statute must have contemplated when it speaks of "inventions relating to substances prepared or produced by chemical processes." It is a substance entirely of vegetable origin and such it remained when completed for the market. The application of water or heat caused no chemical change in the soy-beans before being ground into a flour. The swelling of the beans in the water-soaking process did not cause any chemical change in the beans nor was that intended; that was a biological change, a process of growth, caused by water which changed something that was inert into something that was alive, a living plant, and this I do not think means the preparation or production of a substance by a chemical process, within the meaning of the statute. I do not think therefore that it can be said that the bleaching material prepared by the processes described, the substance sold by Continental and used by Weston, was one prepared or produced by a chemical process, within the meaning and intendment of s. 40 (1), and that is the conclusion which I have reached. If I am correct in this then it matters not whether the words "intended for food" means a substance that is actually prepared to be consumed as food—which is hardly the fact here—or whether it includes a substance to be used in the preparation of an article to be consumed as food, bread in the cases before me, as was decided in one or more of the English cases to which I was referred. I am therefore of the opinion that the bleaching material described and claimed by Haas is not a "substance" to which s. 40 (1) applies, and consequently the defences raised by Mr. Gowling, under this provision of the statute, and which I have already mentioned, fall.



The difficulty in determining what is a "chemical process" within the meaning of s. 38A (1) of the English Patents Acts was pointed out by the Law Officer in the matter of the *Application of R.R.* for a patent (1) and to that I might refer. The application there related to the fractional distillation of mineral oils, whereby a series of lubricating oils, defined by their viscosity values and other physical characteristics, were obtained, and on appeal from the Assistant Comptroller the Law Officer was required to decide whether or not the substance covered by the Claims in question was one prepared or produced by a chemical process, as was held by the Assistant Comptroller, and which view was in fact upheld on the appeal. I shall refer to two passages from the decision of the Law Officer, Sir Thomas Inskip, S.G. The passages are:

Mr. Minty has pointed out the objections and difficulties that would arise if one were to divide certain substances into those that are, in fact, prepared or produced by a chemical process and those that are only prepared or produced by a chemical process in the sense that nature probably put them through those processes. I appreciate the difficulties which might arise. Mr. Potts, on the other hand, points out that the language of subsection (1) of Section 38A ought to be interpreted in its literal sense, and he says that, in fact, the particular article which is the subject of his invention has not been prepared or produced by a chemical process. Mr. Minty submits that the Section refers to the case of inventions relating to substances which are or can be prepared or produced by chemical processes, but there, again, as Mr. Potts points out, that leads to certain difficulties, and it sweeps in a vast amount of material, or it might sweep in a vast amount of material, which was not in contemplation when the Section was drafted.

I very much shrink from holding that "substances prepared or produced by chemical processes" includes substances which have only been prepared or produced in nature by chemical processes. I think that human agency is probably implied in the Section. I do not, however, propose to decide this case by any principle or rule which I am prepared to lay down as applying to this and to other cases, because broadly speaking, I think, in this particular case, the article is produced by a chemical process; and, even if Sir Ernest Pollock in the *S. Co.'s* case had not expressed the opinion which is merely obiter dictum for that particular case, that one must not interpret "chemical process" in a narrow way, I should have read that Section in such a way as to enable me to come to the conclusion in the present case that what is called the fractional distillation of these natural mineral oils is a chemical process, which has resulted in the production of a substance which is the subject-matter of the invention claimed. Therefore, without laying down any rule which might lead to complications or difficulties, and without extending the structure, which, Mr. Potts says, is being slowly built up on the basis of the decision in the *S. Co.'s* case, I have come to the conclusion, as a pure question of fact in this case, that the process in question is a chemical process within the meaning of Section 38A of the Act.

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I need not comment upon these observations of the Law Officer except to point out that he was inclined to distinguish between substances prepared or produced in nature by chemical processes and those prepared or produced by chemical processes at the instance of human agency.

I must in fairness pursue my discussion of this aspect of the case a step further. When the flour bleaching medium of Haas is incorporated in the dough in the bakery, as directed by Haas, along with several other ingredients, it necessarily becomes subjected to warmth and moisture and the bleaching enzyme contained therein then commences to function as a catalyst and it speeds up the oxidation of the carotin pigments in the flour, and this results in the whitening of the unbleached flour as has already been explained. That, in a technical sense, some chemical changes take place in the dough mixture in the bakery, in the process of making bakery products, must, I think, be conceded, but that is not, I think, preparing or producing the invented substance here by a chemical process. Some chemical change I have no doubt occurs in the baking of all bread, or in the cooking of practically every food product. For example, as I understand it, the addition of yeast to dough effects a chemical change, the enzymes of yeast changing the sugar into carbon dioxide, but one would hardly refer to this, at the date of the enactment of s. 40 (1), as the baking of bread by a chemical process, or the preparation of dough by a chemical process, and I do not think that s. 40 (1) of the Patent Act was intended to mean this. Any reaction or change brought about in the dough, or in the bread, by the incorporation of Wytase or its equivalent in the dough, preparatory to the baking of bread, is not, in my opinion, the preparation or production of an invented substance by a chemical process within the contemplation of the statute, and even if the bread should here be regarded as an invented "substance" within the purview of the statute, I do not think that it could be said to be a substance produced by a chemical process.

Finally, I come to the Claims of the Specifications sued upon and which I have earlier set out quite fully. I do not think it is necessary to repeat any particular Claims in any of the patents in question, or to engage in any

lengthy discussion of them. Read in the light of the several Descriptions, which seem to disclose clearly and unambiguously what is claimed, the Claiming Clauses do not appear to be difficult of construction. The Specifications, I think, fully comply in all respects with the requirements of s. 35 (1) and (2) of the Patent Act, which set forth the requirements of a Specification. The description, manufacture, operation and use, of all that is claimed as invention seem to be adequately set forth. I agree with Mr. Gowling that it was unnecessary that so many patents should have been issued, and which have caused more or less confusion, but, for reasons which I have already stated, I do not think that the patentee should suffer any penalty on this account. I do not know of any principle upon which the Claims for the bleaching material and the processes of making the same should be denied and I think it is well settled that a patentee is entitled, in cases of the nature before me, to Claims, not only for the product which is a new manufacture, but for the processes by which they are made as well. Nor do I think that the Claims for the product are too broad in their scope, that is to say, the patentee was entitled, in the state of facts here, to claim any carotin decolorizing agent derived solely from vegetable material and of the nature found in the soy-bean. I have in mind also the process described and claimed for preparing the bleaching medium and which has been referred to as the "dry process." I think there is sufficient distinction between that process and the so-called "wet process" to merit a valid claim for the former, and I can see no reason why the patentee should not be permitted to claim it. If the patentee had limited his Claims to either one or the other, one can easily imagine a defendant in an infringement action claiming non-infringement because he employed whichever of those two processes was not claimed by the patentee. That, I think, affords the answer to the contention that the French patent issued to the plaintiff, and which I earlier discussed, is an anticipation of Haas's bleaching material prepared by the so-called "dry process." And I might here refer to the contention that there was a distinction between Haas's bleaching material and that used by Weston, because in the latter case no cereal filter or diluent was used, but as Haas has claimed his bleaching

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agent both with and without a filter or diluent that defence cannot in any event prevail. I was disposed at first to be doubtful of those Claims in one or more of the patents which relate to the process of producing bread, white in colour, by incorporating with unbleached flour a bleaching medium consisting solely of vegetable material containing an active carotin-removing enzyme and effecting a bleaching while the dough is being prepared for baking. However, after a careful consideration of this class of Claims I have concluded that they are valid though possibly it was unnecessary to make them on the ground that their subject-matter was sufficiently protected by other Claims. I therefore think that the process thus claimed, and which was fully described and disclosed, affords subject-matter for valid Claims.

In the result I think the plaintiff must succeed and with the usual consequence as to costs.

*Judgment accordingly.*