ORIGINAL

IN THE HIGH COURT OF AUSTRALIA

CORBETT AND ANOTHER

V.

ENVOUR SYNDICATE PROPRIETARY LIMITED.

REASONS FOR JUDGMENT.

Delivered at SYDNEY,
MONDAY,
on 14th AUGUST, 1944.

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CORBETT & ANOR.

v.

ENVOUR SYNDICATE PROPRIETARY LIMITED.

ORDER.

Appeal allowed with costs. Order of Deputy Commissioner set aside and in lieu thereof ordered that the opposition be allowed with costs and that the patent applied for should not be granted.

CORBETT & ANOR.

v.

ENVOUR SYNDICATE PROPRIETARY LIMITED.

REASONS FOR JUDGMENT. LATHAM C.J.

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ENVOUR SYNDICATE PROPRIETARY LIMITED.

REASONS FOR JUDGMENT. LATHAM C.J.

This is an appeal from a decision of the Deputy Commissioner of Patents in opposition proceedings by the appellants to a grant of a patent to the respondent. The opposition is based upon an objection that the invention for which the respondent seeks a patent (No. 114865) has been patented in the Commonwealth on an application of prior date, namely No. 102040, 14th July 1936 - Patents Act 1903-1935, sec. 56(c). The Deputy Commissioner was of opinion that the invention applied for had not been patented as alleged and, accordingly, granted the patent for which application was made.

The invention for which a patent was claimed by the applicant relates to improvements in the manufacture, recovery and concentration of aliphatic organic acids. The object of the invention as stated in the complete specification was to enable such acids to be produced in high concentrations in a simpler and cheaper manner than had theretofore been the case. The specification stated that known processes applied azeotropic distillation for the purpose of concentrating acids by using entraining agents, but that it had not hitherto been possible to use entraining agents which were the most advantageous from the point of view of thermal efficiency, so that more than one operation was required in order to procure a high degree of concentration.

The invention may be explained by taking as the starting point a weak solution of an organic acid such as acetic acid. In such a solution there would be contained, first, the acid, and secondly, a diluent, generally water. In the applicant's process a third element is added to the solution, namely an entraining agent described as forming an azeotropic distillate with the diluent of the acid, but not with the acid itself, and also a fourth element,

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namely a substance or substances having a greater affinity for the acid than has the diluent or the entraining agent.

The essential characteristics of the fourth element were stated to be that (1) it must be of a higher boiling point than the acid (so as to facilitate ultimate separation of the acid from the substance); (2) it must be soluble in the acid, but substantially insoluble in the diluent (so as to unite effectively with the acid in solution rather than with the diluent); such solution could be either physical or chemical, but, if chemical, the "composition formed thereby" should be such that it would be readily decomposed on heating so as to liberate the acid; and (3) it should not form any constant boiling point mixture with the acid (so that it would not be taken off with the acid upon distillation).

Butyl acetate was particularly referred to as a desirable entraining agent, but it was explained that in azeotropic distillation the nearness of the boiling points of butyl acetate and acetic acid brought about a complete miscibility, so that there would not be an effective separate distillation of the two substances. Accordingly, the invention proposed to add another substance or substances with a greater affinity for acetic acid than that possessed by butyl acetate, so that upon distillation the butyl acetate would substantially disappear with the distillation, leaving behind the acetic acid, together with the fourth substance of greater affinity. The acid and this substance could then readily be separated by known methods. Substances which had such greater affinity were indicated, specific reference being made to substances present in or derived from coal tar and wood tar and certain aliphatic esters, aldehydes and ketones of high boiling point. The specification emphasises that, in order to bring about a successful operation of the process, the substance used should have a high boiling point (generally above 170°C) and information was given as to the preferable temperatures in the case of various substances.

The applicant claimed -

"The /

1. "The process of concentrating aliphatic organic acids which consists in removing the acid diluent by means of an entraining agent which forms an azeotropic distillate with the said acid diluent but not with the acid, under the conditions of the process, characterised in that there is present a substance or substances which has or have a greater affinity for the aliphatic organic acid than has the diluent or the entraining agent."

There were four other claims, all of which included "the process according to Claim 1" or as substantially described in the specification.

The opponent contended that Patent No. 102040 was a patent for the invention described in Claim 1 of the applicant's patent.

The opponent's patent related to the same subject as that of the applicant, and it is described in the specification as relating to "an improved process for the concentration or recovery of organic acids from weak solutions in water or other liquid carrier". The complete specification discloses a means of concentrating an organic acid such as acetic acid from a weak solution by adding to the solution a solvent. Various solvents were mentioned, including butyl acetate, and also substances which it was agreed are derived from coal tar or wood tar and ketones and phenol derivatives.

The opponent's specification described a process consisting in adding such a solvent to the weak solution of organic acid, stirring the mixture and then allowing it to settle. The solvent containing the acid could then be separated by being poured off or drawn off from the container, or by distilling off the original carrier or diluent and returning any solvent which it had taken off in such a distillation to the solution containing the acid. If this were done, the recovered solvent could then be used again in a continuous process, though this fact was not specifically mentioned in the specification.

The remaining solvent containing the acid which was left behind after separation had been effected by removing the carrier or diluent could then be dealt with by known methods for the purpose of separating out the acid.

The first and second claims in the specification of the opponent's patent referred to processes for concentrating an organic acid from a weak solution by using a solvent of butyl alcohol or

butyl acetate or hydrogenated phenol or other substances corresponding to the fourth substance in the applicant's patent and allowing the mixture to settle so as to separate the solvents still containing the acid from the original carrier of the acid. It was not contended that these claims, which involve the addition of only one substance to the original solution of organic acid, were the same invention as that disclosed in the applicant's application.

The Deputy Commissioner was of opinion that the applicant's patent disclosed a process of distilling off the diluent with an entraining agent, leaving behind the acid and a substance which had greater acid affinity than either the diluent or entraining agent, whereas the opponent's invention only claimed the addition to a solution of organic acid of a solvent or mixture of solvents, which was then allowed to settle without any necessary application of heat, so that the concentration of the acid (in combination at the penultimate step with a solvent) was effected without the use of any fourth substance. He held that there was a substantial difference between the two inventions, and that the patent applied for should therefore be granted.

Claim 3 in Patent No. 102040, however, is in the following terms:-

> "3. A process according to Claim 1 in which the butyl alcohol or butyl acetate is in part replaced by a hydrogenated phenol, a hydrogenated phenol ester, a hydrogenated phenol ketone, or a hydrogenated alkyl derivative of a phenol."

This claim covers a process in which there is added to a weak solution of an organic acid both butyl alcohol or butyl acetate and hydrogenated phenol or some other substance corresponding to the fourth substance mentioned in the applicant's specification. It is accordingly argued that the patent granted in respect of claim 3 in fact includes the applicant's process. The process as described in claim 3 includes adding to a weak solution of organic acid two substances: first, butyl acetate, and, secondly, a substance possessing the characteristics of the applicant's fourth substance. If this were done and the mixture

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were distilled, that which would take place would be exactly what is described in the applicant's specification. There would be an azeotropic distillation of, for example, butyl acetate carrying off the diluent with that entraining agent (described in the specification as a solvent), and there would remain behind the acid, combined with a hydrogenated phenol or similar substance (also described as a solvent but in fact being a substance with a high acid affinity).

The applicant's specification explains how this effect is produced, while the opponent's specification shows no realisation of the fact stated in the applicant's specification that where the process was used as stated in claim 3 the butyl acetate would tend to pass off with the water or other diluent and the hydrogenated phenol or other substance would remain behind with the acid. The opponent's specification regards both of the agents mentioned as only solvents. The applicant's specification distinguishes their effects by explaining that the butyl acetate would act as an entraining agent, taking off the diluent, while the other substance would remain with the acid by reason of its greater affinity for the acid. But, although the opponent's specification does not exhibit any knowledge of this fact, the use of the process in accordance with claim 3 would bring about, by the use of the same substances, when distillation was applied, as stated in the opponent's specification, the same result as that which is effected by the use of the applicant's process as disclosed in its specification.

The question which the Court has to consider is whether the two inventions are substantially the same. If the applicant's invention is included within the claims which are protected by the grant of a patent to the opponent, then the opposition should succeed, though in a case of doubt the patent should not be refused, but the parties should be left to such other proceedings as they might think proper to take - an action for infringement, a proceeding for revocation. The onus is on the opponent. See Ross' Patent, 30 R.P.C. 722: Zucker's Patent, 44 R.P.C. 257. In my opinion in the present case the opponent has shown that, by virtue of claim 3, he has in fact obtained protection

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for a process which includes the process disclosed in the applicant's application, although there is no indication that the opponent understood the differential operation of the two forms of solvent to which his specification referred. This, however, is not a matter which can affect the decision upon the issue raised. The opponent's patent is in fact a patent covering the invention which the applicant describes and claims in his specification. Accordingly, in my opinion the appeal should be allowed, and it should be adjudged that a grant of a patent to the applicant should not be made - Patents Act 1903-1935, sec. 59.

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JUDGMENT STARKE J.

This is an appeal from a decision of the Deputy Commissioner of Patents dismissing opposition on the part of the appellants to the grant of Letters Patent to the respondent. The ground of opposition was that the invention of the respondent had been patented in the Commonwealth on an application of the appellants of prior date. The question is whether or not the invention sought to be patented is the same as that patented on the appellants' application of prior date. Only that is patented which is claimed, and in cases of doubt the grant should be allowed.

The appellants' invention, according to their claims, is for a process for concentrating or recovering an organic acid from a weak solution in which the solvent for the acid and consisting of butyl alcohol or butyl acetate is intimately mixed with the weak solution, the mixture is allowed to settle, and the solvent containing the acid is separated from the original carrier of the acid, and for processes according to this claim, in which the butyl alcohol or acetate is replaced wholly or in part by a hydrogenated phenol ketone or a suitable hydrogenated alkyl derivative of phenols or by a mixture of two or more such agents, and also for processes according to any of these claims in which the solvent containing the acid after separation from the original carrier of the acid is treated to separate the acid from the solvent.

Organic acids include formic and acetic acids, as is mentioned in the complete specification of the appellants' invention. Again, that specification sets forth that the solvent containing the acid is separated from the original carrier by suitable means, such as decanting or drawing off the heavier liquid from below or by distilling off the original carrier and returning any distilled solvent to the solution containing the acid or by any other suitable means. Further, the evidence is that hydrogenated phenol esters or ketones and hydrogenated derivatives of phenol are coal-tar derivatives or their chemical equivalents.

The invention which the respondent claims in the first claim is the process of concentrating aliphatic organic acids in removing the acid diluent by means of an entraining agent which forms an azeotropic distillate with the said acid diluent but not with the acid, under the conditions of the process, characterised in that there is present a substance or substances which has or have a greater affinity for the aliphatic organic acid than has the diluent or the entraining agent. Aliphatic organic acids include acetic acid, which, as the complete specification states, is the most important commercial aliphatic organic acid. The acid diluent is, as the specification indicates, a weak solution of acid and liquid, usually water. Butyl acetate is, according to the specification, the preferred entraining agent, but amyl acetate, ethylene dichloride, and so forth, may be employed. The term azeotropic, according to the evidence, is applied to a mixture of two or more liquids distilling over without decomposition at a certain ratio at a constant boiling point. And the specification states, by way of example, that substances that have a greater affinity for the aliphatic organic acid than has the diluent or the entraining agent are certain substances present in or derived from coal or wood tar or from an aliphatic ester, aldehyde or ketone having a higher boiling point than the aliphatic acid. The other claims

are for processes, according to the claim already mentioned, characterised in that the acid is acetic acid, the entraining agent butyl acetate and the substances of greater affinity for the organic acid are those already mentioned with certain other characteristics.

The subject matter of the two inventions described and claimed is the same:- the concentration and recovery of organic acids from weak solutions in water or other liquid carrier. The appellant claims butyl alcohol or butyl acetate and certain coal or wood tar substances or their derivatives as solvents, whilst the respondent claims them and other agents as well as emtraining agents. But, whether called solvents or entraining agents, their purpose is the same, namely, the concentration of the organic acid by removal of the acid diluent. And this may in each case be effected by means of distillation in which a solvent or entraining agent such as butyl acetate forms an azeotropic distillate with the acid diluent but not with the acid. Much stress is laid in the respondent's specification and claims on the presence of a substance or substances having a greater affinity for the aliphatic organic acid than has the diluent or the solvent or entraining agent. But such substances may be used in the appellants' invention, and claim 3 is for a process in which butyl alcohol or butyl acetate is in part replaced by certain coal or wood tar substances or their derivatives. The importance and action of these substances in the concentration of organic acids are not explained in the appellants' specification as in that of the respondent. But their presence in the solution is described and distinctly claimed. And they will act or react in the one case in just the same manner as in the other case.

Consequently, in my opinion, it is established, beyond doubt, that the invention claimed by the respondent was patented in the Commonwealth on an application of prior date and this appeal should be allowed.

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Judgment — Williams J.

The respondent applied for the grant of letters patent under the Patents Act 1903-1935 for an invention entitled Improvements in the Manufacture, Recovery and Concentration of organic aliphatic acids. The grant was opposed by the appellants under the provisions of sec.56(c) of the Act upon the ground that the invention had been patented in the Commonwealth on an application by them of prior date, namely by patent No.2829 dated 14th July 1936 entitled Improvements in Concentrating or Recovering organic acids and organic acid radicles from weak solutions. The Deputy-Commissioner of Patents decided to dismiss the opposition and grant letters patent to the respondent and it is against this decision that the appellants have appealed to this Court.

The appellants' specification states that in the application of the invention a weak solution of organic acid such as formic or acetic acid is taken, that the solution is intimately mixed by any desired means with one or a mixture, in any desired proportions, of solvents for acids such as butyl alcohol, butyl acetate, a hydrogenated phenol ~~ketone~~ ester such as cyclohexanone, which will dissolve the acid or acids, a hydrogenated phenol ketone such as cyclohexanone which will dissolve the acid or acids, or a hydrogenated alkyl derivative of phenols which will dissolve the acid or acids such as methyl cyclohexanone, preferably in quantities in excess of that required to dissolve the amount of organic acid present; that the mixture of solvent and weak solution of the organic acid is well stirred and then allowed to settle, and that the solvent containing the

acid is separated from the original carrier by suitable mechanical means such as decanting or drawing off the heavier liquid from below, or by distilling off the original carrier and returning any distilled solvent to the solution containing the acid, or by any other suitable means. The specification therefore contemplates the addition of either one or a mixture of the solvents mentioned to the x weak solution in order to recover the organic acid from the liquid carrier, and that the separation may be mechanically effected either without heating by decanting the liquid carrier or by drawing off the solvent from below or by distilling (that is boiling) off the carrier (in which case it is recognised that some of the solvent will go with the carrier because the specification states that any distilled solvent can be returned to the solution containing the acid). The specification recognises that when this stage is reached by any of these means the separated acid will contain some of the solvent, because it states that the separated solvent containing the acid can be subjected to any desired chemical operation to bring about the formation of esters or salts which contain the acid radicle of the acid present, or to any desired mechanical operation, such as distillation or freezing, to separate the acid from the solvent.

The specification contains a number of claims, of which the appellants contend that the third claims the same invention as that claimed by the respondent. This claim refers to claim 1, so that it will be necessary to set out both claims. Claim 1 is in the following terms:-

> "A process for the concentrating or recovering of an organic acid from a weak solution in which a solvent for the acid and consisting of butyl alcohol or butyl acetate is intimately mixed with the weak solution, the mixture is allowed to settle, and the solvent containing the acid is separated from the original carrier of the acid."

Claim 3 is in the following terms:-

> "A process according to claim 1 in which the butyl

alcohol or butyl acetate is in part replaced by a hydrogenated phenol, a hydrogenated phenol ester, a hydrogenated phenol ketone, or a hydrogenated alkyl derivative of a phenol."

The third claim, therefore, includes a chemical process by which organic acid is recovered from a weak solution and concentrated by mixing it with a solvent consisting partly of butyl alcohol or butyl acetate and partly of hydrogenated phenol, phenol ester, phenol ketone, or an alkyl derivative of a phenol and the solvent containing the acid is then separated from the original carrier inter alia by distillation.

The specification of the respondent's invention, after pointing out that it was known that organic aliphatic acids could be concentrated by azeotropic distillation in the presence of an entraining agent which forms a ternary constant boiling mixture with the acid and a certain percentage of the diluent (usually water), states that the acid cannot generally be concentrated above a certain limit by this method when use is made of those entraining agents which are most advantageous from the point of view of thermal efficiency, so that, if an acid of higher concentration is required, it is necessary to submit it to a still further operation; and that the present invention consists in removing the diluent by means of an entraining agent which forms an azeotropic distillate with the acid diluent but not with the acid, under the conditions of the process, and having present in association with the acid a substance or substances which have a greater affinity for the acid than has the diluent or the entraining agent. The specification describes in some detail the essential characteristics of the substances which have a greater affinity for the acid than for the entraining agent or the diluent, and gives as examples certain substances present in or derived from coal tar, or wood tar, or certain aliphatic esters, aldehydes or ketones of high boiling point. The specification also states that the most important commercial aliphatic organic acid is acetic acid, and that butyl acetate is probably the most desirable substance available

for use as an entraining agent to form an azeotropic mixture with the water, and recognises that some portion of the added substances will be left behind with the acid after the distillation because it states that the water may be almost completely removed leaving behind a concentrated acetic acid containing the substance of greater affinity therefor, so that it is necessary to run off the slightly impure acetic acid and subject it to distillation to obtain a high grade concentrated acetic acid. The first claim is in the following terms:-

> "The process of concentrating aliphatic organic acids which consists in removing the acid diluent by means of an entraining agent which forms an azeotropic distillate with the said acid diluent but not with the acid, under the conditions of the process, characterised in that there is present a substance or substances which has or have a greater affinity for the aliphatic organic acid than has the diluent or the entraining agent."

Claims 2, 3 and 4 then proceed to characterise certain features of the process described in claim 1, while the last claim, 5, is for the process substantially as described in the specification.

In order to succeed the appellants must show that the inventions claimed by the respondent in its specification are each substantially the same as the invention claimed by them in the third claim of their specification. Halsbury 2nd Ed. Vol. 24 p. 564. If the Court is left with a reasonable doubt in the matter then the applicant for letters patent, in this case the respondent, must be given the benefit of the doubt. But as each of the subsequent claims in the respondent's specification in the present case depends upon the first claim, it will only be necessary to compare the third claim in the appellants' specification with the first claim in the respondent's specification in order to determine whether the two inventions are substantially the same.

To my mind the chemical process described

in the latter claim is the same in substance as one method of operating the chemical process, namely the addition of a mixture of the two substances already mentioned to the weak solution and then distillation, included in the description in the former claim. All that the respondent has really done is to explain in the body of his specification why the addition of certain substances which are the same as or chemical equivalents for the substances referred to in the third claim to the weak solution of the organic acid in its liquid state is more effective, where distillation is used, to produce a higher concentration than if butyl alcohol or butyl acetate alone is added.

For these reasons I feel no reasonable doubt that both inventions are substantially the same, and that the appeal should therefore be allowed.