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LEXSEE 189 USPQ 143

**IN THE MATTER OF THE APPLICATION OF VERNE R. RINEHART**

**Patent Appeal No. 75-608**

**UNITED STATES COURT OF CUSTOMS AND PATENT APPEALS**

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**March 11, 1976, DECIDED.**

**PRIOR HISTORY:** [\*\*1] Serial No. 130,743.

**LexisNexis(R) Headnotes**

**OPINIONBY:**

MARKEY

**OPINION:** [\*1049]

MARKEY, Chief Judge.

This is an appeal from the decision of the Patent and Trademark Office Board of Appeals (board) affirming the examiner's final rejection of claims 1 through 9, which are all the claims in appellant's (Rinehart's) application serial No. 130,734, filed April 2, 1971 n1 entitled "Process for Preparing Resin." We reverse.

n1 The present application is a continuation-in-part of application serial No. 667,854 (parent), filed September 14, 1967, which in turn is a continuation-in-part of application serial No. 254,754, filed January 29, 1963, both of which are now abandoned. Prior to the present appeal, the rejection of parent application was appealed to the U.S. District Court for the District of Columbia. Goodyear Tire & Rubber Co. v. Schuyler, Com'r., Civil No. 666-71 (D.D.C., Feb. 25, 1975). Upon stipulation, that action was dismissed with prejudice, after the express abandonment of the parent application, but without prejudice to the allowance of materially

different claims, or of the same or similar claims on a record supporting them, such as the record now before us.

The Invention

Commercial [\*\*2] scale quantities of polymeric ethylene terephthalate (PET) are produced in either a batch or continuous process by heating a dicarboxylic acid with glycol in the presence of a preformed low molecular weight polyester solvent n2 under superatmospheric pressure and utilizing a low ratio of glycol to acid. The product may be conventionally condensation polymerized in the presence of a catalyst.

n2 The solvent may include stabilizer, catalyst, and ether inhibitors.

The claims have been treated together by Rinehart and the solicitor and will be so treated here. Claims 1 and 4 are illustrative:

1. The method for the commercial scale production of polyesters which comprises adding commercial scale quantities of ethylene glycol and a free aromatic dicarboxylic acid in the molar ratio of glycol to acid of from 1.7:1 to 1.05:1 to a solvent consisting of a preformed low molecular weight linear condensation polyester of a glycol and a dicarboxylic acid, said polyester having an average degree of polymerization of from 1.4 to 10, heating and reacting the mixture at a temperature above the melting temperature of the low molecular weight linear polyester at a pressure of from about 20 [\*\*3] to about 1000 pounds per square inch gauge pressure until a linear condensation polyester resin

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of said glycol and acid having an average degree of polymerization of from 1.4 to 10 is formed.

4. The method for the commercial scale production of polyesters which comprises continuously adding commercial scale quantities of ethylene glycol and terephthalic acid in the ratio of from 1.7:1 to 1.05:1 of ethylene glycol to terephthalic acid to a solvent consisting of low molecular weight ethylene glycol-terephthalate polyester having an average degree of polymerization of from 1.4 to 10 while heating and reacting the mixture at a temperature above the melting temperature of the low molecular weight ethylene glycol-terephthalate polyester at a pressure range of from about 20 to about 1000 pounds per square inch gauge pressure, continuously venting the water vapor formed in the reaction at such a rate that the pressure in the system is maintained constant within said pressure range and continuously withdrawing an amount of low molecular weight ethylene glycol-terephthalate polyester about equal to the amount of ethylene glycol and terephthalic acid added.

Board

The board affirmed the [\*\*4] rejection of claims 1 through 9 under 35 USC 103 as [\*1050] obvious on Pengilly n3 and Munro et al. (Munro) n4 "considered together." n5 Both Pengilly and Munro form PET by heating, in either a batch or continuous process, a dicarboxylic acid with glycol, utilizing low ratios of glycol to acid (for example, 1.05:1.0 to 1.3:1.0 for Pengilly), and then polymerizing the low molecular weight ester formed therefrom in the presence of a catalyst. The processes differ in that the initial step of the Pengilly process is conducted at atmospheric pressure utilizing a preformed polyester solvent, whereas Munro operates at a higher pressure absent the solvent.

n3 U.S. Patent No. 3,427,287 issued February 11, 1969.

n4 U.S. Patent No. 3,050,533 issued August 21, 1962.

n5 The board also affirmed a double patenting rejection of those claims under 35 USC 101 based upon the copending parent application.

Express abandonment of the parent application, subsequent to the board's decision, moots the issue.

The appealed claims differ substantively from those of the parent application only in reciting "commercial scale production" utilizing "commercial scale quantities." Because the [\*\*5] claims in the parent application had been rejected under 35 USC 103 on the same prior art and logic, the board merely adopted the previous board opinion, which held that the references established a case of "prima facie obviousness." The earlier board, agreeing with the examiner that Pengilly and Munro considered together rendered the claimed subject matter prima facie obvious because each suggested consonant advantages, stated:

For example, Pengilly suggests that by using a polyester solvent shorter heating times and less glycol is required, and Munro et al suggests that by using higher pressures a shorter reaction time is required. One of ordinary skill in the polymer art would therefore except that if higher pressures were used in other art processes (i.e., Pengilly) shorter reaction times would be necessary. n6

n6 The earlier board also speculated that Munro's continuous process may "actually involve the use of preformed ester as the reaction solvent if the reaction takes place throughout the reactor and if, during the initial part of the process, the product is not withdrawn as rapidly as it is formed."

The board considered the rebuttal evidence, a single affidavit [\*\*6] by the inventor, Rinehart, to be insufficient. The primary apparent purpose of that evidence was to show the commercial inoperability of Pengilly and Munro, taken individually, compared to Rinehart's commercially used method. Rinehart's extensive affidavit included, however, substantial analysis of the entire field of polyester production and of what, in his view, Pengilly and Munro would actually teach those skilled in the art. The experimental pilot plant evidence is summarized below for a low charge molar ratio of glycol to acid (1.1:1.0):

	1 Munro	2 Rinehart	3 Pengilly	4 Munro
Pressure (psig)	40	40	0 (Atmos.)	40
Temperature (degree C.)	250-261	248-252	*	260-262
Reactant Batch Size (pounds)	122.1	122.1	122.1	268.6
[Solvent]/Batch	No [Solvent]	1.2/1.0	1.2/1.0	No. [Solvent]

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	Esterification Reaction			
	1 Munro	2 Rinehart	3 Pengilly	4 Munro
Average Time (Min.)	330	150	657	483
	Properties of High Polymer			
% Ether	2.99	1.68	1.51	3.08
Melting Point	244.9	252.2	252.8	244.1
Gardner Rd	27.1	24.9	27.0	25.4
Gardner b+	14.0	8.3	13.6	17.8

\* The temperature was increased at a rate of 3 degrees C/30 minutes from about 220 degrees C to 245 [\*\*7] degrees C. [\*1051]

Rinehart alleged commercial success, based on the 1970 conversion by Goodyear Tire and Rubber Company (the assignee of Rinehart) from the ester interchange method, used since 1959, to Rinehart's direct esterification method.

The affidavit states:

Both the Pengilly, and Munro and Maclean, procedures based on my experience and as evidenced from their patents are operable on a small scale. However, neither of their patents points to any recognition of the problems which arise from scaling up to a commercial process. It is implicit in their patents that the described procedures are satisfactory for commercial operation; but I have found that their techniques are not satisfactory on a commercial scale at about equimolar proportions. The advantages claimed by Munro and Maclean for their process are a short reaction time, improved color, higher softening point and a minimum ether content. However, I have found that as the Munro and Maclean process is scaled up beyond laboratory equipment the reaction becomes inconveniently long, the color deteriorates, the melting point is lowered and the ether content increases. The process of Pengilly was similarly operable [\*\*8] on a small scale and not suitable for scale-up to a commercial process.

The board concluded that the affidavit evidence did not rebut its finding of prima facie obviousness because, in its view, the prior art clearly suggested higher pressure, together with an expected attendant advantage of increased reaction rate, as a solution to the commercial difficulties allegedly encountered by Rinehart. Moreover, the recitation to which the affidavit is directed, "commercial scale production" utilizing "commercial scale quantities," was viewed as "inherently" obvious. The board did not consider the utilization of the claimed method by Rinehart's assignee to be evidence of commercial success sufficient to establish unobviousness.

Issue

Whether, in the light of all the evidence, the claimed

method would have been obvious at the time the invention was made.

#### OPINION

Pengilly and Munro individually teach methods for the production of PET which differ, in different respects, from that claimed by Rinehart. A determination under 35 USC 103, however, requires consideration of the entirety of the disclosure made by the two references to those skilled in the art.

A prima facie case [\*\*9] of obviousness is established when the teachings from the prior art itself would appear to have suggested the claimed subject matter to a person of ordinary skill in the art. Once such a case is established, it is incumbent upon appellant to go forward with objective evidence of unobviousness. *In re Fielder*, 471 F.2d 640, 176 USPQ 300 (CCPA 1973).

#### Prima Facie Obviousness

On the appeal involving Rinehart's parent application, the board was limited to the sterile evaluation of the claims and the prior art necessitated by availability of only the application and the cited references. Based on that evaluation, that board stated:

We agree with the examiner that, in view of Munro et al., it would be obvious to operate the process of Pengilly at superatmospheric pressure. Looking at it from another point of view, it would be obvious in view of Pengilly to employ preformed ester as a solvent in the reaction of Munro et al. [\*1052]

On the appeal of the present application, the board stated:

With regard to the rejection under Section 103, we find ourselves in substantial agreement with the position of the examiner as set forth in his answer. The claims on appeal are in essence [\*\*10] the same as those in Serial No. 667,854, which is now before the District Court for the District of Columbia (Civil Action 666-71), the basic difference being the involved claims recite and are limited to "commercial scale production" utilizing "commercial scale quantities." The claimed invention is otherwise identical insofar as the material limitations defined are concerned. The claims in parent case Serial No. 667,854 were rejected under Section 103 over the

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same art applied herein and essentially for the same reasons. Insofar as the question of whether or not the combination of the teachings of Pengilly and Munro et al would render the claimed process prima facie obvious, the same arguments were presented by appellant and the examiner in both the prior case and herein. Based on these arguments, the Board of Appeals agreed with the position of the examiner and affirmed the rejection. Appellant has set forth no good and sufficient reason why we should reconsider the prior Board decision or reach any other conclusion based on the arguments alone; we therefore adhere to that position and adopt it as our own.

The only remaining question for this Board to consider with regard [\*\*11] to the Section 103 rejection is whether or not the affidavit filed under the provisions of Rule 132 is sufficient to rebut the prima facie case: in our opinion, it is not.

The board erred in adopting the earlier opinion. The basis for evaluation and for decision had changed. The present board had before it not only the application and the prior art but all of the un rebutted facts established in Rinehart's affidavit. At that stage no question of prima facie obviousness remains. The appealed claims must be reconsidered in the light of all the evidence, and the resultant finding, that the claimed invention would or would not have been obvious, is to be made in such light.

The concept of rebuttable prima facie obviousness is well established. Cf. *In re Freeman*, 474 F.2d 1318, 177 USPQ 139 (CCPA 1973); *In re Klosak*, 59 CCPA 862, 455 F.2d 1077, 173 USPQ 14 (1972); *In re D'Ancicco*, 58 CCPA 1057, 439 F.2d 1244, 169 USPQ 303 (1971). It is not, however, a segmented concept. When prima facie obviousness is established and evidence is submitted in rebuttal, the decision-maker must start over. Though the burden of going forward to rebut the prima facie case remains with the applicant, [\*\*12] the question of whether that burden has been successfully carried requires that the entire path to decision be retraced. An earlier decision should not, as it was here, be considered as set in concrete, and applicant's rebuttal evidence then be evaluated only on its knockdown ability. Analytical fixation on an earlier decision can tend to provide that decision with an undeservedly broadened umbrella effect. Prima facie obviousness is a legal conclusion, not a fact. Facts established by rebuttal evidence must be evaluated along with the facts on which the earlier conclusion was reached, not against the conclusion itself. Though the tribunal must begin anew, a final finding of obviousness may of course be reached, but such finding will rest upon evaluation of all facts in evidence, uninfluenced by any earlier conclusion reached by an earlier board upon a different record.

The board's analytical process appears to have resulted, at least in part, from Rinehart's erroneous

argument that the mere inclusion of "commercial scale production" and "commercial" scale quantities" served to patentably distinguish the appealed claims over those in the parent application. In response, the [\*\*13] board engaged in comparison of the two sets of claims and emphasized their essential identity. Whether engendered by Rinehart's arguments, the concentration on the "inherent obviousness" of scaling up led Rinehart and the solicitor into error.

Rinehart erred in contending that the mere insertion into the claims of "commercial [\*1053] scale," without more, would constitute a distinguishing limitation. Though inclusion of the phrase in the claims does no harm, it is clear that mere scaling up of a prior art process capable of being scaled up, if such were the case, would not establish patentability in a claim to an old process so scaled. Moreover, absent evidence to the contrary, nothing in Pengilly or Munro indicates that their processes are not effective on a commercial scale, and Rinehart concedes that commercial operation is implicit in the reference patents.

Rinehart argues here that merely because the appealed claims include a "crucial limitation" to commercial quantities, they were "different claims" and that the board could not therefore have applied the earlier decision to them. We cannot agree. Absent the evidence in Rinehart's affidavit, use of commercial quantities [\*\*14] in the processes of the references would have been obvious. If all Rinehart had done was to add the broad "commercial scale" phrases, the board's treatment would have been correct. It could not have found that the mere use of commercial quantities established unobviousness of the invention as a whole. But Rinehart did more. He submitted substantial evidence touching the basic question of whether his claimed process would have been obvious.

The board erred, as above indicated, in comparing the appealed claims to the earlier claims as though it had been established that the latter did in fact set forth an old or obvious process. In such comparison, the board proceeded as though the earlier claims were a kind of prior art to Rinehart and as though the earlier decision on those claims was a kind of res judicata. The differences between the two sets of claims were simply not at issue in this case. The sole question is whether Rinehart's claimed process would have been obvious in view of all the evidence.

#### The Evidence

The opinion of the board on the appeal involving the parent application included the following:

Appellant alleges the existence of numerous difficulties with [\*\*15] the processes of Pengilly and Munro et al. which, he claims, are overcome by combining the features of both processes. However,

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appellant's allegations are not supported by any evidence.

The evidence now on record, in our view, does support Rinehart's allegations. The assertion that the processes of Pengilly and Munro cannot satisfactorily be scaled up is neither challenged nor rebutted. Though mere reference to "commercial scale quantities" in the claims and affidavit does not itself establish patentability, it does establish the environment of the invention. It outlines the problem solved and gives dimension to Rinehart's contribution. The claims must therefore be considered, and the references must be evaluated, in the light of an effort to achieve commercially effective production. As will appear hereinbelow, the affidavit evidence also spotlights portions of the prior art disclosures indicating unobviousness of the claimed process.

It is true that Pengilly and Munro both disclose processes for polyester production by direct esterification. Rinehart's affidavit admits that he began with an effort to employ the process of Pengilly on a commercial scale and that the [\*\*16] only essential difference between the claimed process and that of Pengilly is the employment of superatmospheric pressure.

The board adopted the earlier opinion, which considered the claimed process as either that of Pengilly with the substitution of the superatmospheric pressure disclosed by Munro or that of Munro with the use of a preformed polyester as disclosed by Pengilly. But that view of the claimed process does not end the inquiry. The question remains whether it would have been obvious, in scaling up Pengilly's process, to have employed Munro's higher pressures or in scaling up that of Munro to have employed Pengilly's preformed polyester.

The tribunals below did not meet the requirement of establishing some predictability [\*1054] or success in any attempt to combine elements of the reference processes in a commercial scale operation. As in *In re Naylor*, 54 CCPA 602, 369 F.2d 765, 152 USPQ 106 (1966), we find nothing in the record which would lead one of ordinary skill to anticipate successful production on a commercial scale from a combination of such elements, without increase in glycol-acid ratio. The record in fact reflects the contrary. The view that success [\*\*17] would have been "inherent" cannot, in this case, substitute for a showing of reasonable expectation of success. Inherency and obviousness are entirely different concepts. *In re Spormann*, 53 CCPA 1375, 363 F.2d 444, 150 USPQ 449 (1966); *In re Adams*, 53 CCPA 996, 356 F.2d 998, 148 USPQ 742 (1966).

The board cited the indication in both Pengilly and Munro that their processes led to rapid reaction time and concluded that improved reaction time would be

expected if elements of those processes were combined. The evidence of record establishes, however, that reaction times of both prior processes lengthen as the processes are scaled up.

The board held the view that Munro's teaching of higher pressures to increase reaction rate would have provided an obvious solution to the problem Rinehart encountered in scaling up the process of Pengilly. But Rinehart's problem was not the need for increased reaction rate. It was, as the evidence established, the existence of lumps of frozen polymer. That problem is nowhere alluded to in either Pengilly or Munro, and of course no suggestion of a solution appears in either reference.

Moreover, Pengilly suggested that superatmospheric pressure [\*\*18] was productive of certain disadvantages, particularly the need for use of a "large excess" of glycol. The use of superatmospheric pressure in a direct esterification process was referred to in other prior patents of record. With the exception of Munro, however, each such reference cited disadvantages of its use or an inability to find it workable. Munro's disclosure of superatmospheric pressure is rendered an abstraction with respect to appellant's problem by Munro's indication of the same excess glycol requirement when a large scale operation is contemplated. Munro employs a large excess of glycol (a ratio of glycol to acid of 3:1) in his example 5, the only example devoted to larger scale production. Rinehart's large scale production process is limited to a substantially equimolar ratio of glycol to acid. In view of all of the evidence, we cannot agree that Munro would suggest to one skilled in the art the use of superatmospheric pressure to solve the problem of scaling up the process of Pengilly.

Similarly, we find no suggestion in Pengilly or in Munro that Pengilly's preformed ester be employed in Munro's process to overcome the problems encountered in scaling up the process [\*\*19] of Munro. Munro, as co-inventor with Lewis in earlier British Patent No. 776,282, was familiar with the use of a preformed polyester in direct esterification, yet neither Munro nor his co-inventor Maclean suggested its use with superatmospheric pressure in the cited reference. We find that the Munro patent contains its own solution to large scale operation, i.e., the use of excess glycol referred to above. That solution is not employed by appellant.

Absence of any suggestion in either Pengilly or Munro that features of the process of one should be combined with features of the other to achieve the commercial scale production of which neither is capable requires a holding that the rejection herein was improper. *In re Avery*, 518 F.2d 1228, 186 USPQ 161 (CCPA 1975). In view of that holding, it is unnecessary to consider Rinehart's allegations of commercial success

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and satisfaction of long-felt need.

REVERSED

The decision of the board is reversed.

