Commissioner's Decision #1236
Décision du Commissaire #1236

TOPIC: OO
SUJET: OO

Application No: 579,048
Demande No: 579,048

COMMISSIONER'S DECISION SUMMARY

C.D. 1236 ....Application No. 579,048 (OO)

Application rejected on the grounds that the subject matter disclosed was obvious in view of several cited references.

The application disclosed compositions useful in reducing or preventing resin shock, the unwanted viscosity increase caused by the addition of certain reactive resins to boron containing alkaline starch-based corrugated board adhesives. The application was rejected on the grounds that the subject matter disclosed was obvious in view of a number of cited references. The Board recommended that the rejection of the application on the grounds of obviousness be reversed, a recommendation which was accepted by the Commissioner of Patents.

IN THE CANADIAN PATENT OFFICE

DECISION OF THE COMMISSIONER OF PATENTS

Patent application number 579,048 having been rejected under Subsection 45(2) of the Patent Rules, the Applicant asked that the Final Action of the Examiner be reviewed. The rejection has been considered by the Patent Appeal Board and by the Commissioner of Patents. The findings of the Board and the decision of the Commissioner are as follows:

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This decision deals with a request that the Commissioner of Patents review the Examiner's Final Action on patent application number 579,048 which was filed on September 30, 1988. The Applicant is H.B. Fuller Licensing & Financing, Inc., assignee of inventor Stephen M. Willging and the invention is entitled "SUBSTANTIALLY VISCOSITY STABLE MOISTURE-RESISTANT CORRUGATED BOARD ADHESIVE@. The Examiner in charge issued a Final Action on June 16, 1995 refusing the application on the grounds that the subject matter disclosed therein was considered to lack inventive ingenuity in view of a number of cited references and the Applicant replied on December 18, 1995 requesting that the refusal be reviewed by the Commissioner of Patents and that an oral hearing be held if appropriate.

The invention relates to preventing resin shock, the unwanted viscosity increase caused by the addition of certain reactive resins to boron containing alkaline starch-based corrugated board adhesives. More particularly the invention relates to an aqueous corrugating adhesive that is formulated from components that limit undesirable viscosity increase during preparation steps which include the step of adding the resin to an aqueous-starch base. The Applicant has found that the use of a hydroxy-containing hydrocarbon compound, such as for example a C_1-C_3 alcohol, a mono-, di- and trisaccharide, or a cyclic or linear polyol, leads to adhesives which exhibit reduced viscosity increase during their manufacture thus making them easier to use without sacrificing any of their desirable properties. Suitable hydroxy-containing hydrocarbon compounds are methanol, ethanol, propanol, ethylene glycol, propylene glycol, glycerol, glucose and other similar compounds. Independent claims 1 and 5 of the application which are representative of the claims in the application are as follows:

> 1. A method of preparing corrugated board which comprises coating an adhesive comprising:
> (a) an aqueous dispersion of gelatinized starch;
> (b) particulate starch particles dispersed in the aqueous dispersion;
> (c) about 0.1 to 5 parts of an acetone formaldehyde resin;
> (d) about 0.3 to 1 parts of an alkali metal hydroxide;
> (e) about 0.05 to 0.5 parts of a boric acid compound; and
> (f) about 0.1 to 5 parts of a compound selected from the group consisting of methanol, ethanol, propylene glycol, ethylene glycol, glucose, or mixtures thereof, each per 100 parts of the adhesive composition, wherein there are about 1 to 15 moles of hydroxyl group per each mole of ketone in the ketone formaldehyde resin, onto the flutes of a corrugated paperboard and contacting the coated flutes with one or more liner sheets.
>
> 5. An aqueous adhesive composition that during preparation is resistant to unwanted viscosity increase, which comprises:
> (a) about 5 to 50 parts starch;
> (b) about 0.1 to 5 parts of a basically reacting polymeric resinous crosslinking agent;
> (c) about 0.3 to 1 parts of an alkali metal hydroxide;
> (d) about 0.05 to 0.5 parts of a boric acid compound;
> (e) about 0.1 to 5 parts of a water soluble hydroxy-substituted

> hydrocarbon compound selected from the group consisting of a C_{1-3} lower alkanol, a diol selected from the group consisting of ethylene glycol, diethylene glycol, propylene glycol, dipropylene glycol and mixtures thereof, a carbohydrate compound, and a polyethylene oxide or polypropylene oxide compounds, or mixtures thereof, and a balance of water, each per 100 parts of the adhesive composition.

In his Final Action the Examiner refused the application in view of United States patents, numbers 2,890,182 [Langlois], 3,408,214 [Mentzer], 3,962,166 [Gordon], 3,562,001 [McGuire] and 4,033,914 [Bovier], and extracts from two reference textbooks; notably Urea Formaldehyde Resins (Addison-Wesley Publishers), 1979, Meyer and Handbook of Adhesive Bonding, 1973, Cagle stating, in part, that:

> The application is rejected as it lacks inventive ingenuity in view of Bovier. The difference thereover is considered obvious in view of Gordon and the state of the art as illustrated by Langlois, McGuire, Mentzer, Meyer and Cagle.

and, finally, that:

> In conclusion, the principle reference to Bovier teaches a weatherproof aqueous adhesive composition composed of essentially the same ingredients as the composition disclosed by the applicant. Bovier uses hydroxyl amines to help stabilize the composition against resin shock (extend pot life) while the applicant uses hydroxy compounds which do not contain amines. This difference is not held to be patentable in view of Gordon. As Bovier points out at column 1, lines 57-68 (and as Langlois further supports) something which is reactive with the aldehyde component of the adhesive will act to extend pot life. Gordon teaches that both hydroxyl amines (Bovier=s compounds) and hydroxyl compounds which do not contain amines (applicant=s compounds) stabilize formaldehyde resins. Therefore, one skilled in the art would expect the applicant=s compounds and Bovier=s compounds to behave in essentially the same manner with respect to the stabilization of the weatherproof aqueous adhesive composition. The other cited references all disclose that particularly exemplified hydroxyl containing compounds either stabilize formaldehyde resins, act as viscosity modifiers in starch/formaldehyde resin compositions, or extend the pot life of starch based adhesives.
>
> Thus, the cited references clearly establish that Bovier=s compounds and those of the applicant have essentially the same function with regard to the control of viscosity in starch/formaldehyde resin adhesive compositions. The cited references also clearly establish that particular compounds exemplified and claimed by the applicant can be used in this manner. It is the examiner=s view, therefore, that a person skilled in the art given the teachings of Bovier, would directly and without difficulty arrive at the teachings of the present application.
>
> Thus, it [is] held that this application contains nothing of an inventive nature in view of Bovier. Therefore, this application is refused.

The question before the Board is therefore whether or not the invention claimed in the application is obvious in view of the cited prior art.

In its response to the Final Action the Applicant firstly notes that Applicant=s corresponding United States and European applications have both issued with claims closely similar to the claims appearing in the present application even though the prior art cited in those

applications was very similar to the prior art which the Examiner has used to reject the present application particularly with respect to the primary reference Bovier. The Applicant then states that in assessing whether an invention is obvious or not the judicial test for obviousness set forth in the Federal Court of Appeal decision in Beloit Canada Ltd. et al. v. Valmet Oy 8 C.P.R. (3d) 289, at page 294, namely:

> **The test for obviousness is not to ask what competent inventors did or would have done to solve the problem. Inventors are by definition inventive. The classical touchstone for obviousness is the technician skilled in the art but having no scintilla of inventiveness or imagination; a paragon of deduction and dexterity, wholly devoid of intuition; a triumph of the left hemisphere over the right. The question to be asked is whether this mythical creature (the man in the Clapham omnibus of patent law) would, in the light of the state of the art and of common general knowledge as at the claimed date of invention, have come directly and without difficulty to the solution taught by the patent. It is a very difficult test to satisfy.**

must be followed, a point of view with which the Board agrees.

The Applicant also correctly notes that an ex post facto analysis of the invention and ex post facto synthesis of an artificially contrived mosaic of references is insufficient to establish obviousness; in other words the issue of obviousness must not be approached by working backwards as, in the words used in the court decision in Van der Lely (C.) N.V. v. Bamfords Ld. [1960] R.P.C. 169 @ 193,

> **.....With the hindsight afforded by the Patentee=s disclosure, the individual stages in the conversion of one device to the other can each be made to appear of a non-inventive character, although certain practical difficulties were acknowledged by Mr. *North* in his evidence. But this is not a fair test of inventive merit. It is the whole gap to be jumped that must be considered, and not the case of passage across stepping stones either not present or hidden from view at the time the crossing was made.**

With regard to the references cited by the Examiner the Applicant notes that United States patent number 4,033,914 to Bovier is the primary reference relied on. Bovier discloses a corrugated board adhesive containing a resin and an amino-hydroxy compound which can be a primary, secondary or tertiary amine compound but is always a derivative of ethanolamine. The essential difference between the Applicant=s compositions and the Bovier compositions is that the Applicant=s compositions use hydroxy compounds which do not contain any amino groups. It is the Examiner=s contention that since the additives used by Bovier and the Applicant both contain hydroxy compounds that there is no invention in substituting Bovier=s compounds with the Applicant=s. However the Board does not believe that this is necessarily the case; thus, whilst it is acknowledged that hydroxyl groups in general react similarly, that does not

necessarily mean that an amino-hydroxy compound and a hydroxy compound would behave similarly in altering the viscosity of resin compositions of the sort disclosed in the application. The Board therefore agrees with the Applicant that a person skilled in the art having the Bovier reference in front of them would not have come directly and without difficulty to the solution taught by the Applicant.

The next most pertinent reference relied on by the Examiner is United States patent number 3,962,166 to Gordon. The Board notes that Gordon discloses stable urea-formaldehyde compositions having a urea to formaldehyde ratio in the range from about 1:1.4 to 1:2.8, a free formaldehyde content of less than about 3% and a concentration of methylol urea in excess of about 60% based on the weight of the mixture. The compositions are prepared by adjusting the pH of an aqueous mixture of urea and formaldehyde to a value greater than about 10, heating the mixture for a certain while then adding a stabilizer selected from the group consisting of a variety of alcohols, amines, aldehydes, and ketones, followed by cooling to room temperature.

It is the Examiner=s contention that Gordon teaches that both compounds containing hydroxyl groups and compounds containing both amino and hydroxyl groups can be used to stabilize formaldehyde resins and that therefore the two types of compounds would be more or less interchangeable when applied to altering the viscosity of the adhesive compositions disclosed by Bovier. In other words that Gordon shows that it would require no exercise of inventive ingenuity to substitute the amino hydroxy compounds disclosed in Bovier with the hydroxy compounds disclosed by the Applicant.

However the Board notes that the adhesive compositions disclosed in Gordon are of a different type than those disclosed by Bovier and the Applicant, particularly in that they do not contain starch as a component, and that the stabilizers are added for a different purpose, i.e. the purpose of producing highly concentrated compositions which must remain stable for periods of months at a

time. The Board therefore agrees with the Applicant that Gordon, either alone or in combination with Bovier, does not render the Applicant=s disclosed invention obvious.

As to the other references cited by the Examiner the Board considers them to be considerably less relevant to Applicant=s invention. Thus United States patent number 2,890,182 to Langlois relates to amylaceous adhesives somewhat similar to those disclosed by the Applicant where the pot life of the adhesive is increased by the

addition of a substance reactive with the aldehyde component of the adhesive. Suitable substances are selected from the group consisting of ammonia, lower aliphatic amines, alkali bisulphites, urea, hydroxylamine, hydrazine, phenylhydrazine and semicarbazide. Since the great majority of these substances are amines with no hydroxy groups present there is, in the Board=s opinion, nothing in the reference to encourage a person skilled in the art to indicate that hydroxyl compounds would be useful for reducing the viscosity of the adhesives disclosed by the Applicant.

As to United States patent number 3,408,214 to Mentzer the invention disclosed relates to the preparation of an adhesive suitable for use as a remoistening adhesive possessing improved open time. The adhesive consists of an ungelatinized chemically modified starch substance, a glycol selected from the group consisting of propylene glycol and polyethylene glycol and a plasticizer. The Examiner considers this reference pertinent because he considers that the Aopen time@ referred to in Mentzer is equivalent to the term Apot life@ used in others of the cited references. However a study of the term Aopen time@ in Mentzer reveals that the term relates to how long a layer of dried adhesive applied to a tape remains usable after being remoistened, in Mentzer this time is a matter of 10 to 15 seconds, whereas Apot life@ refers to how long a liquid adhesive such as that disclosed by the Applicant remains usable after being prepared in liquid form, a matter of hours rather than seconds. The Board therefore considers that Mentzer is not a relevant citation either on its own or in combination with any of the other references.

Similarly United States patent number 3,562,001 to McGuire relates to articles moulded from melamine resins where their gloss, lustre and abrasion resistance are improved by means of a composition formed from water soluble and water insoluble melamine resins, a thickening agent, plasticizer selected from the group consisting of glycols such as ethylene glycol, glycerol, etc., solvent and catalyst. The composition is applied to the foil used to decorate the ware before application of the foil to the ware. The compositions of McGuire are therefore totally different from those disclosed by the Applicant and the additives are added for a completely different purpose. The Board therefore considers that there is no teaching in McGuire that hydroxyl containing compounds would be useful for decreasing the viscosity of starch-based adhesives of the type disclosed by the Applicant. As to the citations from the two textbooks the Board considers that they are only of use to show the state of the art and are too general to be applicable to the Applicant=s invention.

The Board therefore recommends that the Examiner=s rejection of the

application be reversed and that the application be returned to the Examiner for further prosecution consistent with the recommendation.

P.J. Davies	**M. Howarth**	**M. Wilson**
Chairman	**Member**	**Member**

I concur with the recommendation of the Board that the Examiner=s rejection of the application be reversed and return the application to the Examiner for further prosecution consistent with the Board's recommendation.

A. McDonough
Acting Commissioner of Patents

Dated at Hull, Quebec,
this 2nd day of February 1999