

IN THE MATTER OF an application under section 72(1) by Albert Henry Knowles for the revocation of patent number 2 202 185 in the name of Naue Fasertechnik GmbH

30/6/95

DECISION

The application for the patent in suit was filed as application No 8803277 in the name of Naue Fasertechnik GmbH & Co KG on 12th February 1988, claiming a priority of 13th February 1987. The application was published on 21st September 1988 and the patent granted on 17th October 1990. It relates to a water-impermeable sealing mat such as is used in hydraulic engineering and waste disposal engineering.

An application for revocation of the patent was filed on 7th January 1994 by Mr A. H. Knowles on the grounds that the invention is not a patentable invention in that it is not novel or does not involve an inventive step having regard to two published patent documents and some correspondence between himself and various companies relating to the exploitation and development of the invention of one of the cited patents of which he is the proprietor. The applicant seeks revocation of the patent in its entirety and costs.

The patentees deny the allegations and request a certificate of contested validity under Section 65 should I find the patent to be wholly or partly valid. They also ask for costs.

The evidence in this case comprises two statutory declarations by the applicant and one by Dr George Heerten, co-inventor of the patent in suit and president of Naue Fasertechnik.

The matter came before me at a hearing on 31st May 1995 at which Mr J D C Turner appeared as counsel for the patentees and the applicant appeared in person.

THE PATENT IN SUIT

The patent in suit is directed to a water-impermeable sealing mat comprising three layers and to a method of making the mat. Such mats are intended to be deployed, inter alia, as barriers against passage of fluids into or through soil. According to the patentees, they have applications in land fill sites, revetments for canals, reservoirs or dams and sealings in landscaping work. There are two principal claims, 1 and 12.

Claim 1 reads as follows :

"A water-impermeable sealing mat comprising a substrate layer, an interlayer of swellable clay, and a cover layer, in which: at least one of the substrate layer and the cover layer consists of non-woven textile material; the other one, if any, of the substrate layer and the cover layer consisting of woven or knitted fabric; and in which all three layers are bonded together by needling".

Claim 12 reads as follows :

"A method of continuously producing sealing mats according to any of claims 1 to 11, comprising applying on the substrate layer the dry, powdered to granular, swellable clay, placing the cover layer thereon, and passing the resulting triple layer material through a needle loom in order to needle the substrate layer and cover layer together".

The remaining claims are all dependant upon either claim 1 or claim 12. The preferred clay material is bentonite.

The specification acknowledges that sealing mats having a non-woven textile substrate layer a bentonite interlayer and a cover layer are known, and refers in this regard to a prior European Patent number 0059625 (hereinafter referred to as "Clem") which is shown as exhibit GH2 to Dr Heerten's declaration. In this prior product the layers are bonded together by adhesive. It is stated on page 1 of the patent in suit that the use of adhesive causes the

mats to: "lose their flexibility owing to the use of adhesive solidifying the individual layers". Other disadvantages of prior art mats are said to be lack of strength because the outer layers are connected only by way of the bentonite interlayer and the fact that they allow the bentonite to expand in all three dimensions when moistened, which can result in cracks thereby destroying the water-impermeability.

The sealing mats of the patent in suit are said to overcome these disadvantages by virtue of the layers being needled together. The process of "needling" is described in Example 1 of the specification as one in which needles provided with barbs pierce the layers of non-woven fabric material (both cover and substrate layers being non-woven in this example) and the bentonite interlayer, and the barbs take care that the individual fibres are interlaced to form a firm structure. The example further states that since the needling operation is not free of vibrations (the needles are carried on boards that are moved up and down at up to about 1000 strokes per minute), a portion of the applied bentonite enters into the fiber batts forming the cover and substrate layers, especially into the pores of the coarse fiber batt of the substrate layer facing the bentonite interlayer.

Thus the effect of the needling, which it is not disputed by the patentees is a technique which is well known per se, is to join the cover and substrate layers of the sealing mat by dragging fibres from one layer through to the other layer, the result being described in Dr Heerten's evidence (which has not been challenged by the applicant) in the following way:

"The needles pierce the cover layer and tear the fibres. The barbs of the needles cause these fibres to pass through the powder layer and through the support layer. The needles are then retracted and the fibres stripped off the barbs. These fibres remain in the cover layer whilst passing through the bottom layer, friction holding the two layers together across the entire surface area of the layer. The powder middle layer has fibres passing through it which largely prevent lateral shifting of the powder in the plane of the layer".

THE CITED DOCUMENTS

Before considering the grounds for revocation, it is convenient to deal with the status of the patent specifications and letters cited by Mr Knowles in this regard.

Mr Knowles has cited two published patent documents. One of these, United States patent No 4344722 (hereinafter referred to as "Blais") was clearly published prior to the priority date of the patent in suit. As regards the other, however, viz United Kingdom patent 2184195 (hereinafter referred to as "Knowles" and of which the applicant is the inventor and proprietor), Mr Knowles has cited the granted version of that patent which was not published until 11 May 1988 that is after the filing date of the patent in suit. For the patentees, Mr Turner submitted that I should in consequence reject this document as prior art. However, it is the case that the granted patent derives from an application under the Patent Cooperation Treaty and was first published in accordance with that Treaty as application No WO85/05431 on 5th December 1985 and before being subsequently published again as a granted United Kingdom patent (with amended claims) on 11th May 1988. It thus seems to me that the cited Knowles patent is a document which, at least in substantial part, constitutes "matter" which in accordance with Section 2(2) of the Act, was published (as the PCT application) before the priority date of the patent in suit and to which my attention has been directed under Section 72(1)(a) as relevant to the patentability of the patent in suit. I think that in these circumstances I cannot simply reject the totality of this disclosure in the manner that Mr Turner appears to have invited me to do simply because Mr Knowles has chosen to refer to the document in its later published form. There is a question as to whether the features upon which Mr Knowles relies were disclosed only in the granted patent and not in the original published application. However, I need consider this only if I find against the patentees on the basis of these features. I will refer hereinafter to the granted form as cited by Mr Knowles unless otherwise stated.

As previously noted, Mr Knowles also relies upon a number of letters between himself and various companies relating to the exploitation and development of the invention of his patent. Two series of letters have been submitted; firstly as appendices C,D and E to the applicant's statement and secondly as appendices C,D and E to his evidence. All the letters are dated

before the priority date of the patent in suit. Whilst most of the letters are the same in both series there are some differences. With regard to these letters Mr Turner submitted that I should consider these as confidential and not publications within the meaning of the Act. In this respect he directed my attention to a decision of the High Court in *Coco v. Clarke* [1969] RPC 41. In this case Megarry J., in setting out at pages 47-48 a test as to whether information has been imparted in circumstances importing an obligation of confidence where there was no formal contract between parties exchanging information, states at page 48:

"It seems to me that if the circumstances are such that any reasonable man standing in the shoes of the recipient of the information would have realised that upon reasonable grounds the information was being given to him in confidence, then this should suffice to impose upon him an equitable obligation of confidence. In particular, where information of commercial or industrial value is given on a business-like basis and with some avowed common object in mind, such as a joint venture or the manufacture of articles by one party for the other, I would regard the recipient as carrying a heavy burden if he seeks to repel a contention that he was bound by an obligation of confidence".

In Mr Turner's submission such circumstances prevailed in the case of the cited letters which appeared to be concerned with approaches made by Mr Knowles to certain companies with a view to joint exploitation of Mr Knowles' ideas, further development thereof or the supply of materials relevant thereto. I am inclined to agree with Mr Turner that the letters fall within the type of exchange of information that the test in *Coco v. Clark* would indicate as confidential. However, as will become clear later, the matter does not turn on this point and for completeness I will deal with the content of these letters, insofar as they are relevant and add to the disclosure of the cited Knowles patent.

Turning now to the disclosure of the two cited patents, "Knowles" relates to a method of forming a rigid structure (such as a pipe or rigid sheet) by providing a sandwich of two flexible skins, for example of plastics, rubber or canvas sheet material, enclosing a layer of filler (eg dry cement - page 8) that can be "activated to a rigid state". Either or both skins may be permeable to a fluid catalyst, eg water to cure the filler to a rigid state. The

"sandwich" is flexible before the filler is activated so enabling the material to be stored in compact form and deployed in a desired configuration. It is stated on page 4 that an object of the invention is to provide a method and apparatus for:

"providing a permanent conforming pipe or conduit structure for conducting fluids and the like that is not subject to the aforementioned limitations, but is instead capable of being easily stored and installed in long, non-rigid lengths over a supporting surface or inside pipes that have been previously installed and then rigidised in situ".

It is also stated on page 5 that:

"In other applications of techniques underlying the invention, other structurally supporting surfaces than pipes, such as walls, panels or ceilings and the like that shield against fluids or the like, can be provided under the present invention and are caused to conform to preselected surface contours and rigidised to resist the penetration of fluids and the like as by conducting the fluids in channels away from the surface".

Claim 1 of the Knowles patent reads:

"A method of forming a rigid structure comprising filling the space between longitudinally extending inner and outer flexible coextensive skins with a filler of the type that can be activated into a rigid state characterised in that the skins are adjusted to a predetermined spacing relative to one another by arranging transversely extending reinforcing fibres between them with the filler embedded in the fibres, and activating the filler while the skins are so adjusted to rigidise the same".

Thus the claim suggests a three layer construction comprising a filler bounded by skins and with transverse fibres within the filler. It is further stated on page 10 that:

"The fibres may be organic or inorganic and may be attached to either or both of the parallel skins to facilitate stabilizing or retaining the cement in place while the structure is still flexible. Numerous methods of stabilizing the cement are contemplated, including a fibrous supporting structure; fibres attached to one skin and extending a portion of the way through the cement.....;interior surfaces between and connecting the inner and outer skin surfaces and compartmentalising the volume of the interior layers; and fibers not attached to either skin surface but extending essentially throughout the cement....., such as a fibrous-web mat embedded in the cement.

A pipe of the present invention may also be made to conduct water by using a rubber-backed carpet as the outer skin with the fibers of the carpet pointing upwardly. Powdered cement would then be poured over the carpet fibers and worked into the fibers completely to surround the fibers. A top layer of water permeable material, such as canvas or sheet plastic having a plurality of small holes throughout, could be placed over the carpet fibers and cement to act as the inner skin surface wall."

I note here that the specification does not specifically mention "needling" or indeed any process whereby the fibres may be secured to the skins other than the use of carpet as one skin.

The second cited patent "Blais" was published on 17th August 1982. It relates to a waterproof and chemical resistant liner for preventing waste material penetrating the soil. The liner is prepared in-situ and comprises two moisture permeable synthetic sheets enclosing a water swellable interlayer of clay. The sheets may be of non-woven fabric and each is "characterised in that it is a flexible material capable of adhesion with the outer surfaces of the clay layer when the clay layer has been activated" (by wetting). The clay is preferably bentonite. Since the liner is prepared in situ the layers are not connected otherwise than by the clay when it becomes wet. Once again there is no reference to needling.

THE EVIDENCE

In his evidence Mr Knowles concentrated primarily on the disclosures of the Knowles patent. At the hearing Mr Knowles appeared to acknowledge that the disclosure of this patent did not specifically refer to the use of his product as a sealing mat, nor the features of swellable clay as the interlayer and the use of needling to produce the fibre bridges between the layers. However, he seemed to be suggesting that, to the skilled man, these features were either inherent in the broader terms used in this disclosure or obvious from it. He did not expand on the relevance of the cited letters at the hearing, but I will nevertheless consider them in what I have to say below.

On the question of the use of the product of the Knowles patent as a sealing mat, Mr Knowles acknowledged at the hearing that he had not originally conceived of this use for his product at the time of filing and was not at that time aware of any of the technical problems or prejudices in the art of sealing mats which the patent in suit was designed to address. However, he appeared to be of the view that the disclosure of his patent would be likely to be considered by the skilled man in the context of sealing mats. To this end Mr Knowles sought to show that a product made according to his own patent and one made according to the patent in suit were similar in character. In his written evidence he has exhibited an extract from a textbook and photographs of a series of experiments he had performed which appear to show that swellable clay used as in the patent in suit will, in certain conditions, eg when wetted and then dried, result in a product which has a certain degree of rigidity. He states in paragraph 2 of his second declaration:

"Swellable clay when activated by water will only swell to the extent allowed by any restriction placed upon it, e.g. when encased by needling between two skins. It can be classed as rigid: On drying while still retaining a percentage of water, it can be classed as rigid: And even before the cracking stage is reached, it can be classed as rigid."

and in paragraph 3 he goes on to state that bentonite clay when it swells between skins:

"certainly stiffens and rigidises the skins within which it is contained".

At the hearing he also referred me to exhibit GH6 to the evidence of Dr Heerten which he alleged confirmed that bentonite clay in the mat of the patent in suit can produce a rigid structure under conditions encountered in use. These experiments were designed to compare the performance in use of the product in suit with that of a glued mat but do not to my mind add anything to Mr Knowles' own experiments. I note also that in two of the cited letters forming appendix E to his first declaration (to GLENO INDUSTRIES dated 18th July 1985 and to STORTEC LTD dated 17th January 1986) reference is made to the use of his product as a liner for tanks and fishponds.

On the question of the use of a swellable clay such as bentonite as the interlayer, Mr Knowles submitted that the references in his patent to "a filler of the type that can be activated to a rigid state" and which is exemplified as "dry cement" are broad enough to include a swellable clay such as bentonite and appeared to be suggesting also that the skilled man would appreciate from the disclosure that such clay was to be included within its scope. In paragraph 2 of his second declaration, Mr Knowles referred to some dictionary definitions of "cement" which are possibly broad enough to encompass swellable clay, and in appendix 2 to that declaration he exhibits the results of further experiments of his showing bentonite clay used to cement some small stones together and, in appendix 3, an extract from a brochure on a form of swellable clay known as VOLCLAY wherein it is stated that this material "is naturally cohesive, binding other materials". At the hearing, Mr Knowles submitted that the evidence of Dr Heerten was that bentonite clay may be "activated to a rigid state". In addition, Mr Knowles has exhibited two letters comprising appendices C and D to his first declaration. In these letters which he states relate to the development of the invention of his patent, the use of "vibrating mud" (allegedly bentonite clay) or of VOLCLAY are discussed, apparently in the context of the interlayer of his patent.

On the question of use of a "needling" process to connect the fibres, Mr Knowles argued that "needling" is merely one available technique for the skilled man to use to produce the bridging fibre arrangement disclosed in the Knowles patent. In support he describes in paragraph 1 of his second declaration how he tried various techniques for bonding the fibres

to the skins of the product of his GB patent:

"The first experiments were made by using carpet, into the pile of which the powder was tightly packed. On to the ends of the pile protruding above the powder was bonded a covering surface skin. Various methods were tried to achieve this, e.g. liquid plastic was floated onto the surface of the powder which bonded and encased the pile ends, so forming an encasing surface skin. Contact and other types of waterproof glues were tried to bond porous/non-porous skins to the ends of the pile. Polypropylene carpet fibres were bonded to polypropylene surface skins by heat, and also close compact stitching. All these methods resulted in one thing. A layered material fastened together by transversing fibres. Thus this broad claim was made in my patent and no restriction was made as to the method used to place the fibres into it".

Mr Knowles' first declaration also refers to the letters in Appendix E to that declaration as disclosing "methods of bonding the layers of the material (of his GB patent) together including that of needling fibres". However, I can find no specific reference to needling layers of the mat together, only to the use of "needlefelts" as skins in a letter of 2nd May 1986 to EARLY's of Whitney.

Mr Knowles did not discuss the "Blais" citation in detail, either in his written evidence or at the hearing, beyond pointing out where he considers that it discloses specific features of the patent in suit, so there is no argument before me as to the way I should look at this document from the point of view of the grounds of novelty or obviousness.

For the patentees, Mr Turner dealt firstly with the cited Knowles patent. He submitted that the interpretation that Mr Knowles has placed upon it went beyond that of the original published application. Mr Turner referred in this respect to the original specification of the cited Knowles patent being directed to specific rigid structures, particularly pipes or roof or wall structures. He submitted that the objects, problems and product thereof were, in consequence, fundamentally different to those of the patent in suit and as such the document was unlikely to be considered by the skilled man. Firstly, he drew my attention to the

numerous references in the Knowles patent to the product being rigid and structural in character whereas the patent in suit was, he submitted, essentially quite different in character. In this latter respect he directed my attention to various passages in acknowledged prior art EP0059625 "Clem" and in the patent in suit itself, which referred to the need for sealing mats to be flexible in use. In "Clem" on page 1 it states that the mat has:

" ...a flexible support capable of venting gas and coated with an adhesive and water-swelling bentonite in such a manner so as to retain its flexibility".

Further on the same page it is stated with regard to the use of the mat:

" under such conditions rigid construction materials would be too hard to work with and extremely difficult to maintain".

Similarly on page 3 it says that according to the invention :

"a flexible sheet for providing a water barrier comprises a flexible support";

and on page 4:

" The invention provides a method of affixing water-swelling bentonite to a flexible support capable of venting gas in such a manner as to retain flexibility and provide a water permeable barrier".

He further pointed to the patent in suit at page 1 where it is stated:

" Such sealing mats are known from European Patent No. 0 059 625 where a flexible substrate layer supports a bentonite interlayer on which a cover layer may be provided.....Moreover such sealing mats lose their flexibility owing to the use of adhesive solidifying the individual layers";

and to page 7 where it states:

"Furthermore, needling ensures flexibility of the sealing mats to a degree that comes close to the good pliability properties of mechanically consolidated non-woven textile materials".

Mr Turner therefore submitted that the Knowles patent did not disclose a sealing mat nor a product which was, especially in view of its rigidity after activation of the filler, suitable as such.

Secondly he submitted that the Knowles patent did not disclose a swellable clay interlayer. The fact that Mr Knowles had, by experiment, and reference to text books shown that clay under certain conditions can become rigid and even exhibit cement-like properties did not in his view mean that the disclosure in that patent of " a filler that can be activated to a rigid state" constituted disclosure of swellable clay. He submitted that the evidence of Dr Heerten and the passages quoted above supported the view that in the sealing mats of the patent in suit the clay filler did not become rigid. Dr Heerten states in paragraph 11, of his declaration: "when activated by absorption of water, swellable clay has the consistency of grease. I would not describe it as a rigid structure." Mr Turner submitted that in any dispute on the facts in these circumstances I should decide in favour of the patentees, since the burden of proof was upon Mr Knowles.

Thirdly, Mr Turner submitted that the Knowles patent did not disclose needle punching or indeed any use of fibres for bonding all three layers together and he referred me in this context to the passage on page 10 of that patent which I have already quoted above. He argued that this did not matter in the context of the Knowles invention since the purpose of the fibres in Knowles was merely to keep, the powdered cement in place during transit, the strength of the structure in situ being provided by the rigidified cement. In contrast the nature of the fibre bridge of the patent in suit was vital insofar as it must keep the structure together once in situ. He quoted various passages from page 10 of the Knowles patent which he claimed illustrated that the bonding of all three layers was not a consideration.

Concerning Mr Knowles contention that needling was merely one known and therefore obvious way of achieving fibre bridges connecting the skins, Mr Turner directed my attention

to the evidence of Dr Heerten which he said indicated that there was at the relevant date considerable prejudice in the industry to any connection of the skins by fibre bridges. According to paragraph 6 of this evidence (on pages 6-7) it was previously believed that any fibres extending through the mat would create water bridges, so destroying the sealing properties, and that the bentonite needed to be present as an homogeneous layer to achieve proper sealing. Mr Turner maintained that the perceived disadvantages of fibre bridges are illustrated by US patent 4 565 468 (hereinafter referred to as "Crawford") which was filed as exhibit GH4 to Dr Heerten's evidence, and which describes a sealing mat wherein the skins are stitched together through the bentonite layer but wherein the upper skin in use is of a biodegradable material (e.g. Kraft paper) which will break up when the bentonite swells so that the latter may form a complete layer. Column 3 lines 59-62 and column 3 line 66 to column 4 line 2 state:

"This expansion (of the clay) causes the Kraft paper to tear and break in response to the expansion so that the bentonite can form a complete layer over the bottom sheet member....The stitches are also covered by the bentonite so as to prevent water from escaping by siphoning or wicking through the stitches. As time passes the stitches decompose in the same fashion that the paper decomposes".

A second point made in Dr Heerten's evidence (again paragraph 6 on pages 5-6) is that needled fibres: "were not expected to withstand the high swelling pressures developed by the clay as it became wet. The shear pressure applied to the mat during use was expected to lead to collapse of the structure as the needled fibres withdrew from the bottom layer".

I note here also that Dr Heerten goes on to say (paragraph 6 on page 9) that it was as late as 1992 that National Seal Company, one of the biggest landfill companies in the US, received a report that the prejudice about the wicking effect of the bridging fibres was not correct in respect of needled mats. A test report to this effect by a Professor Daniel and dated 16th October 1992 is exhibited as GH5 to Dr Heerten's evidence.

Paragraph 7 of Dr Heerten's evidence summarises the unexpected advantages obtained by using the mat of the patent in suit as being: better sealing effect than a glued mat; good

transmission of shear forces between cover (top) layer and carrier (bottom) layer; good resistance to sliding apart of the layers; very limited escape of bentonite and no cracking on repeated wetting and drying. Dr Heerten has exhibited at GH6 copies of test reports on a comparison between a glued mat and a needled mat which appear to show that the needled mat performs better in most of these respects. In exhibit GH7 Dr Heerten shows instructions for the use on sloping terrain of a prior art mat wherein special precautions are described: "to prevent slippage during installation". Dr Heerten claims that these precautions are not required with the mat of the patent in suit.

Dealing with the other cited patent "Blais", Mr Turner submitted that this was more remote from the invention in suit than the "Clem" patent given as prior art in the patent in suit. He further submitted that it did not disclose "needling" nor indeed any means to connect the layers. He suggested that the skilled man would be unlikely to consider "needling" in the context of Blais for the same reasons of technical prejudice given above in respect of the Knowles document. Additionally he directed my attention to a decision of the Opposition Division of the European Patent Office concerning the European Patent (EP 0 278 419) corresponding to that in suit, wherein it had been decided that patent was not obvious in the light, inter alia, of the "Blais", "Crawford" and "Clem" documents which are also before me in these proceedings.

On more general indications countering the contention of obviousness, Mr Turner directed my attention to the age of bentonite sealing mat technology (as exemplified by US patent 2 277 286, dated 1942; exhibit GH1 to Dr Heerten's declaration) without anyone conceiving the invention, even though "needling" is also a very well known technique. He also pointed to Dr Heerten's evidence (paragraph 10) which states that the market share had been turned around between 1990 when glued mats were predominant and 1992 when needled mats had taken over (a market analysis in exhibit GH8 to Dr Heerten's evidence appears to support this), the major manufacturer of glued mats now selling stitch bonded mats (similar to but outside the present invention). I note here also that Dr Heerten states (paragraph 6 on page 9 of his declaration) that the biggest manufacturer of bentonite in the US (American Colloid Co.) now produces and distributes the mats according to the patent in suit.

NOVELTY

It is clear from what has been said above that no single document specifically discloses the combination of a product suitable for use as a sealing mat formed from substrate and cover layers (at least one layer being of non-woven textile material) and enclosing a layer of swellable clay; all three layers being bonded together by a "needling" process. Mr Knowles has submitted that the terms of his patent are broad enough to embrace all of these features within its scope. However there is a distinction between this and specific disclosure of the features and it is not correct to assume that one inevitably leads to the other. In my view to establish lack of novelty, Mr Knowles needs to show that the terms of his patent were such that the skilled man would have readily appreciated that its terms inherently disclosed the said features. I do not consider that he has provided the evidence to substantiate this.

Mr Knowles has attempted to show, by experiment and reference to textbooks that swellable clay can like his "filler", in certain circumstances, be "activated to a rigid state" and also that the mat of the invention in suit can be regarded as forming a product with a certain degree of rigidity, again under certain conditions. From this Mr Knowles has made the assumption that he has disclosed in his patent both the use of such clay and a product that is suitable as a sealing mat. Irrespective of the validity of his experiments (Dr Heertens evidence contests that his product is rigid in the same sense as the Knowles product) I do not consider that Mr Knowles' assumptions are justified on the evidence before me. Moreover, I cannot disregard the essential feature of the mat of the patent in suit being produced by a needling process. If it had been shown that the process of needling produced a structure identical in every respect to that of the Knowles patent the questions may have been somewhat different but there is no evidence before me to this effect.

Turning to the "Blais" document, Mr Knowles has made no detailed submissions on this save to point out that it discloses the use of bentonite clay in a sealing mat comprising skins of non-woven fabric. The skins are brought together in situ so that there are no bridging fibres bonding the skins.

Accordingly I find that the ground of lack of novelty fails.

OBVIOUSNESS

Turning now to the question of obviousness, it seems to me that the starting point for any determination should be those documents which are specifically directed to sealing mats. As far as the present proceedings are concerned the most relevant of these documents are represented by "Blais", "Crawford" and "Clem". From these documents it is clear that it was known before the priority date of the patent in suit to have a sealing mat comprising skins at least one of which was of non-woven fabric with an interlayer of swellable clay and that the skins could be attached to the clay by glueing, stitching or the natural adhesiveness of the wet clay. It is also apparent from the preamble to the patent in suit and from the evidence of Dr Heerten, (which has not been challenged by Mr Knowles) that there were disadvantages with all of these arrangements as well as prejudice in the art against solving them by permanently linking the skins together by means of fibres passing through the bentonite. I note here that this prejudice was evidenced in Crawford which was published slightly later than the Knowles patent.

From this basis I think one must then ask whether the skilled man would -

- (a) be likely to consider the fibrous structure disclosed in the Knowles document as a suitable means of holding the swellable clay interlayer in a sealing mat; and
- (b) recognise that needling was a technique which would be suitable for producing such a fibrous structure.

Regarding the relevance of the Knowles patent, I find Mr Turners submissions quite persuasive. The fact that the Knowles product is essentially rigid and exemplified in terms of cement as the interlayer (thereby leading to products which are primarily structural in character) does not seem to me to suggest utility in the field of sealing mats and I have no evidence before me to the contrary. This view is, I think, reinforced by the evidence of Dr Heerten (again not disputed by Mr Knowles) on the special problems associated with the manner in which such mats are used whereby they must have good shear strength, the

strength to withstand the high swelling pressures developed by the expanding clay, no wicking of fluid along the fibres connecting the layers, and no cracking on repeated wetting and drying of the clay. None of these problems are discussed in the context of the Knowles product. As Mr Turner has observed, the "Knowles" disclosure seems to regard the function of the fibres as primarily to hold the cement in place during transport and conforming to the final shape, whereas in the product in suit they are required to perform other functions.

However I will set the question of relevance aside for the moment and look at the significance of "needling". Here it seems to me that the patentees have shown, with the Crawford document, the experiment on the needled product performed by Professor Daniel and the analysis of market trends that there was, before the patent in suit, considerable resistance in the art to the use of fibre bridges to connect the skins. In the light of this it does not seem likely to me that the appearance of the Knowles document would have been sufficient to tempt the skilled man not only to abandon this prejudice, but also to choose to produce the fibre bridges by employing a particular process with no indications in the art of any likely improvement in the result.

Even were I to consider Mr Knowles' letters as prior publications, they do not appear to me to teach anything about the possible efficacy of a sealing mat having a simple clay interlayer with the skins connected by needled fibres. The idea of a bentonite constituent in an interlayer also comprising cement was apparently considered but taken no further. In this regard, the letter of appendix D to Mr Knowles' first declaration (to BTR FATATI) states: "I can keep ground water from affecting the internal cement structure by impregnating a layer ofbentonite with the carpet under the cement" The letter of appendix C to the same declaration (to M.K.SHAND LTD) refers to the use of "vibrating mud" (allegedly bentonite) but does not make clear whether it is used in place of the cement. There is certainly nothing in these letters to indicate utility in the combination of a clay interlayer and a needled connection between outer skins.

I do not think the broad terms of the Knowles patent, to which Mr Knowles has repeatedly referred in his written evidence and at the hearing are material to the consideration. I cannot, it seems to me, ignore a line of thought in the art of sealing mats which seems to

require that any new and potentially relevant disclosure must offer clear technical signs that the prejudice might be misconceived. The Knowles document may be broad enough in its terms to embrace the new approach adopted by the patent in suit but it does not in my view provide a sufficiently clear stepping stone for the skilled man to use in reaching that approach.

I note here that in the decision of the EPO to which Mr Turner has referred me the Knowles document was not considered. However the EPO concluded that it would not be obvious to use "needling" to replace other means of connecting the layers of clay-filled sealing mats and that the art teaches away from such use. In as much as the same documents were considered, my conclusions appear to be consistent with those of the EPO.

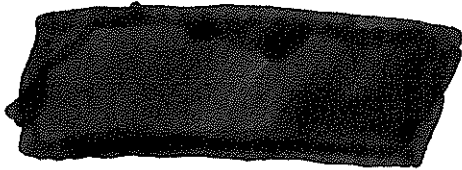
Taking all of these factors into account I am led to the conclusion that the ground of obviousness also fails.

The patentees have requested the grant of a certificate of contested validity. The conditions of section 65(1) regulating the issue of such certificates have been met and, in view of my findings on the issues of novelty and obviousness, it is appropriate that I should accede to the request. I therefore certify that the validity of patent No 2202185 has been contested in proceedings under section 72(1)(a) and that the patent has been found valid in respect of those grounds where validity was put in issue.

Since I have found that the applicant has failed on all the grounds pleaded, I award the patentee Naue Fasertechnik GmbH & Co KG the sum of £700 (seven hundred pounds) as a contribution toward their costs and direct that this sum be paid by the applicant Mr Albert Henry Knowles.

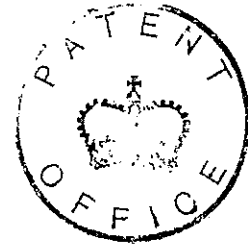
This being a substantive matter, the time in which an appeal may be lodged is six weeks from the date of this decision.

Dated this 20 day of June 1995



G M Bridges

Superintending Examiner, acting for the Comptroller



THE PATENT OFFICE