Intellectual Property Office

BL O/227/17

12 May 2017

PATENTS ACT 1977

APPLICANT	Cordek Limited
ISSUE	Whether patent application GB1021915.2 complies with section 1(1)(b) and section 14(5) of the Act
HEARING OFFICER	Dr Jim Houlihan

DECISION

Background

1 The application was filed on 23 December 2010 in the name of Cordek Limited. Alastair Seaton is named as the sole inventor. It was published on 27 June 2012 as GB2486723A.

2 The examiner had raised objections in his first report that the claims lacked novelty and an inventive step and also were not clear or supported. He also raised an objection on the grounds of plurality of invention. In ensuing rounds he pursued objections on the grounds of lack of inventive step, clarity and support. As the applicant and examiner were not able to agree, the applicant was offered a hearing. The examiner's final report was dated 3 March 2017. The applicant filed a skeleton argument and a signed witness statement from Mr Alastair Seaton on 28 March 2017.

3 A hearing took place on 5th April 2017. Mr Julian Bardo of Abel and Imray, assisted by Natasha Perks, represented the applicant. Mr Alastair Seaton and Mr Simon Poole from Cordek attended. The examiner Mr Joshua Nolan also attended.

Compliance date issues

4 I noted that the compliance date had expired on 16 February. Mr Bardo was well aware of this and said he would file a F52 under Rule 108(2) to extend the period to 16 April. I said I would allow a further discretionary extension in advance to extend the period to 16 June which would enable the applicant to keep their options open. Both extension requests have been filed and accepted. The compliance date is 16 June.

The invention

5 The alleged invention ("the invention" for convenience) relates to shuttering for use in casting slabs or beams, particularly floor slabs, over a substrate in the construction industry. The shuttering is characterised by hexagonally (honeycomb) shaped cells which are created by moulding expanded plastics such as polystyrene. The application claims that the hexagonal structure provides an advantage over rectangular structures in accommodating upward heave. An embodiment of the invention is illustrated by Figures 3, 4 and 5 below.

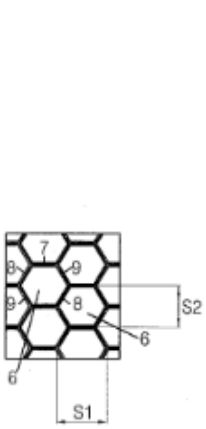

Figure 3

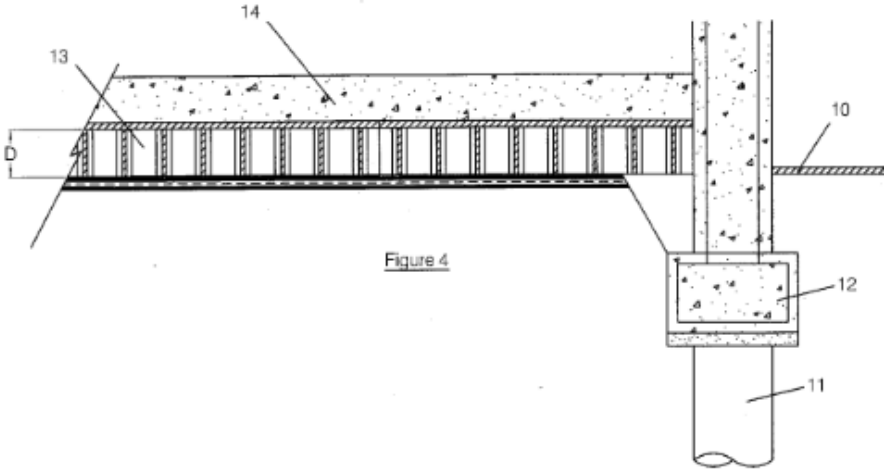

Figure 4

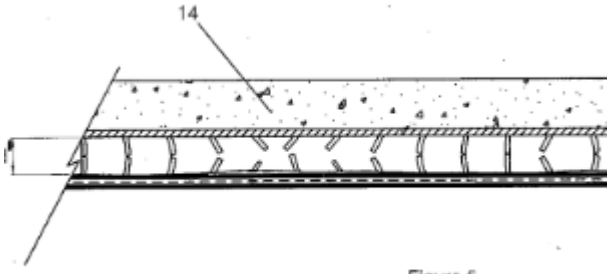

Figure 5

6 The hexagonal cells have three pairs of walls (7,8,9). In use the shuttering, for example an expanded polystyrene support array, (13) is placed on a surface level substrate 10, for example an excavated area, and usually has a top sheet on which concrete is cast and allowed to cure (Figure 4). As the concrete cures, the support slab (14) becomes self-supporting between walls. When the concrete has cured, heaving movement, an upward compressive force, may occur and if that exceeds a predetermined limit the moulding fails (Figure 5). The shuttering has two states - a 'safe' load in which the walls remain intact and a 'fail-load' in which the upward heave causes the cells to collapse (Figure 5).

7 The application emphasises that the three walls in an hexagonal structure offer more uniformity in accommodating heave than four-walled rectangular shuttering as rectangular structures are more likely to fail at a midpoint between their walls than at the intersection of walls.

The law

8 The issues to be decided are whether the invention of claim 1 is clear and supported and involves an inventive step. Sections 14(5)(b) and 14(5)(c) set out the requirements for clarity and support. Section 1(1(b) and section 3 of the Act set out the requirement for inventive step.

9 Section 14(5) reads, as is relevant, that:

The claim or claims shall -
(a)…;

(b) be clear and concise;

(c) be supported by the description and

(d)….

10 Section 1 reads, as is relevant, that:

"1(1) A patent may be granted only for an invention in respect of which the following conditions are satisfied, that is to say –

(a)…

(b) it involves an inventive step..."

(c)…

(d)…

and references in this Act to a patentable invention shall be construed accordingly.

11 Section 3 of the Act requires that:

"An invention shall be taken to involve an inventive step if it is not obvious to a person skilled in the art, having regard to any matter which forms part of the state of the art by virtue only of section 2(2) above (and disregarding section 2(3) above)."

12 Whether an invention defined by the claims involves an inventive step is assessed using the four-step test first formulated by the Court of Appeal in *Windsurfing*

International Inc. v Tabur Marine (Great Britain) Ltd[1] and restated by the court in *Pozzoli SPA v BDMO SA*[2]:

> *"(1)(a) Identify the notional "person skilled in the art";*
>
> *(1)(b) Identify the relevant common general knowledge of that person;*
>
> *(2) Identify the inventive concept of the claim in question or if that cannot readily be done, construe it;*
>
> *(3) Identify what, if any, differences exist between the matter cited as forming part of the "state of the art" and the inventive concept of the claim or the claim as construed;*
>
> *(4) Viewed without any knowledge of the alleged invention as claimed, do those differences constitute steps which would have been obvious to the person skilled in the art or do they require any degree of invention?"*

The claims

13 The present version of the claims was filed on 21 October (although the marking of 17 June 2016 remained) and consists of 28 claims two of which are independent claims, claim 1 and claim 20.

14 Claim 1 reads:

> *Shuttering for use in casting a slab/beam over a substrate, comprising a hollow support structure including a plurality of spaced apart support walls defining cells therebetween, the support structure being able to be placed on the substrate to support the slab/beam during casting, wherein the support structure is formed with its spaced apart walls by a moulding process, wherein the support structure is moulded from expanded plastics material and wherein the cells are of substantially hexagonal shape.*

15 Claim 20 reads:

> *The method of manufacturing shuttering for use in the casting a slab/beam over a substrate, the method including the step of moulding a support structure from expanded polystyrene material to provide a shuttering according to claims 1 to 18.*

16 Claims 2-19 are dependent on claim 1. Claims 21-27 are dependent on claim 20. Claim 28 is an omnibus claim.

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[1] *Windsurfing International Inc. v Tabur Marine (Great Britain) Ltd*, [1985] RPC 59
[2] *Pozzoli SPA v BDMO SA* [2007] EWCA Civ 588

Claim construction - clarity and support

17 The examiner had objected that claim 1 was not clear or supported as the reference to a moulding process in the phrase "*the support structure is formed…by a moulding process*" partly defined the invention in terms of a process.

18 As the examiner points out it is well established law as per the House of Lords judgment in *Kirin Amgen Inc v Hoechst Marion Roussel (2005] RPC 9* that such form of claim is only allowable if it cannot be defined satisfactorily in terms of its structure or composition.

19 I agree that claim 1 relates to both a product and method of forming that product. This is an important point which I invited Mr Bardo's submission on at the beginning of the hearing. Mr Bardo said it was a new objection in the examiner's final letter of 3rd March. However, I found it was raised in earlier examination reports. Mr Bardo agreed the applicant had had the opportunity to fully consider this issue, but that it had not been argued with the IPO before.

20 Mr Bardo accepted the legal basis of the objection but said that the invention cannot satisfactorily described in terms of its structure and composition. Mr Bardo said "*we think it is a very important part of the inventive concept that it (the hexagonal shuttering) is moulded*". He also emphasised the three-walled joins in hexagonal structures were important in creating a narrow range between a safe-load and a fail-load which affords greater uniformity in 'wall collapse' than rectangular structures in which joins are made up of four walls. He said that moulding was critical to creating the desired uniformity in the strength of the walls in hexagonal arrays. Having read the description I understand this principle. Mr Bardo submitted that rectangular arrays cut from large blocks in which cells are cut out would vary in their density to a greater extent than hexagonally moulded blocks.

21 I have studied the specification and find the passage on page 25 lines 16-page 26 line 8 explains how the moulding process is carried out. The passage reads:

> "*The support structure 2 is moulded in one piece directly in the shape shown in Figures 1 to 3. Since the support structure 2 is devoid of any bulky regions, all of it is close to a surface of the mould during the moulding process and it is therefore possible to achieve a very good uniformity throughout the structure 2 of the density of the expanded material forming the structure. In order to create the cells with vertical walls of constant thickness, mould portions are introduced into the cell space from opposite sides. For each cell, one half of the cell is filled by a mould portion introduced from one side and one half is filled from a mould portion introduced from the other side. The mould portions meet at a plane that is inclined to the vertical so that each mould portion is tapered towards its leading end. Thus the mould portions can be introduced into the cells with clearance between them, only coming together along their interface when they reach their fully inserted positions. Similarly, when they are withdrawn after moulding, they can be moved apart in directions inclined to the adjacent moulded walls with a component of the movement away from the walls"*

22 I asked if there were other ways of creating the hexagonal cells from moulded plastic. Mr Seaton said that hexagonal structures could be cut out of a block using a hot wire (which heats beyond its leading edge) or a router head (which he said does not work well as it tends to tear polystyrene beads). This would require drilling a hole in the expanded plastic block and introducing the wire and cutting each hexagon in turn. Mr Seaton reaffirmed the point made by Mr Bardo that large blocks are less likely to have uniformity of density compared to a moulded thin-walled structure (Mr Bardo indicated that, as a reserve position, if I found against them on the product claim he would like the opportunity to amend the claims to method claims).

23 On the basis of the applicant's submissions I am content to accept the process feature in question and to construe claim 1 as relating to a product defined by the process of making it. Thus, I consider claim 1 is clear.

Inventive step

24 The examiner had objected that independent claims, claims 1 and 20, and the claims dependant on them lacked an inventive step. I will consider whether claims 1 and 20 are obvious.

Windsurfer/Pozzoli

Identify the notional "person skilled in the art"

25 In the correspondence there was agreement between the examiner and applicant that the skilled person was a person skilled in the art of shuttering *per se*. Mr Bardo recognised that such a person could be a team. Given the agreement on this point I was inclined to accept it. However, Mr Bardo's submissions on common general knowledge caused me to consider the characterisation of the notional skilled person. This matter was discussed at length as it is critical to my decision. I summarise it below.

26 Mr Bardo submitted that shuttering for ground heave is a specialised subject and market and therefore the skilled person would lie in that field. Mr Bardo said Cordek occupies approximately 50% of the market share. In my view market share is not necessarily reflective of the number of players (and therefore potential persons skilled in the art) in that market. For example, a large player could dominate a market which has many smaller players. Mr Bardo and Mr Seaton said there were only two significant players in the UK market of shuttering suitable for heave ('heave shuttering' for convenience). Apart from Cordek the other player in this market is Clayboard (the proprietor of the document cited as the state of the art below, GB2390390).

27 I note that the form of claim 1 "..*for use…*" means that the shuttering of the invention claimed only has to be suitable for heave shuttering - it is not limited to the use in constructions susceptible to heave. Moreover, I note that six of the seven prior art documents cited by the examiner (referred to below in paragraphs 33-45) refer to

heave shuttering. Thus, as I see it there are two possibilities of constructing the notional skilled person - (i) the person in the niche area of heave shuttering and (ii) the person in the wider field of shuttering *per se*. Given the weight Mr Bardo attributed to the market type and the characteristics of the skilled person in the different markets, I will, for completeness, construct the skilled person in two ways.

28 My primary construction of the skilled person is a designer or manufacturer in the field of ground heave shuttering and therefore their knowledge is limited to that field.

29 My secondary construction is a designer or manufacturer of shuttering in the construction industry who would be aware of shuttering and its applications in various major structures, walls and ceilings as well as floors (this is supported by my review of the seven cited prior art documents, referred to below). Several of these patent applications refer to the potential use of the particular shuttering materials illustrated in those applications in the construction industry in general.

Identify the relevant common general knowledge of that person

30 The examiner had cited seven patent documents in support of his notion that hexagonal structures were known in the shuttering field. Mr Bardo challenged the relevance of these patent documents to the common general knowledge on account of the well-known passage in *General Tire & Rubber Co v Firestone Tyre & Rubber Co Ltd* [1972] RPC 457 as referenced in the Manual of Patent Practice. In that passage Sachs LJ said:

> "*The common general knowledge imputed to such an addressee must, of course, be carefully distinguished from what in patent law is regarded as public knowledge. This distinction is well explained in Halsbury's Laws of England, Vol. 29, para. 63. As regards patent specifications it is the somewhat artificial (see per Lord Reid in the Technograph case [1971] FSR 188 at 193) concept of patent law that each and every specification, of the last 50 years, however unlikely to be looked at and in whatever language written, is part of the relevant public knowledge if it is resting anywhere in the shelves of the Patent Office. On the other hand, common general knowledge is a different concept derived from a commonsense approach to the practical question of what would in fact be known to an appropriately skilled addressee-the sort of man, good at his job,that could be found in real life. The two classes of documents which call for consideration in relation to common general knowledge in the instant case were individual patent specifications and 'widely read publications'. As to the former, it is clear that individual patent specifications and their contents do not normally form part of the relevant common general knowledge, though there may be specifications which are so well known amongst those versed in the art that upon evidence of that state of affairs they form part of such knowledge, and also there may occasionally be particular industries (such as that of colour photography) in which the evidence may show that all specifications form part of the relevant knowledge…"*

31 Mr Bardo's submission in the basis of Re. *General Tire* was that seven patent documents cannot be taken to be part of the common general knowledge in this field. The kernel of the issue to me is not that the examiner is saying that these particular documents are part of the common general knowledge but that they *illustrate* the common general knowledge. Patent examiners are technical specialists and it is fitting for them to assert their views about the state of knowledge in a particular field. It helps in making such assertions to have supporting documentary evidence. Thus, I think it is reasonable for the examiner here to refer to patent documents in order to substantiate his view about the common general knowledge in this field.

32 Mr Bardo submitted that the skilled person is likely to be much more aware of products on the market than of patent applications and that patent applications may be more appropriate as illustrative of the common general knowledge if they gave rise to a product. He said it is quite uncommon for patent applications to turn into commercial products which then become common general knowledge. I accept the thrust of Mr Bardo's points here - that the innovation pipeline is fraught with perils along which many inventions fall by the wayside and skilled workers are more likely to be familiar with products than with patent applications. However, I would add the caveat that patent documents as technical literature may nevertheless refer to materials which are commonplace and thus can provide useful illustrations of the common general knowledge. In all, the authorities make it clear that common general knowledge is a question of degree, field by field, a point which Mr Bardo accepted.

33 Mr Bardo was keen to discuss each of the documents cited in turn. Despite my view that the seven prior art documents are to be considered collectively I think it is appropriate to consider Mr Bardo's submissions on them. I will therefore briefly summarise his submissions here. I should point out that all of the documents cited by the examiner, apart from FR2899839, concern shuttering for use in laying floors, typically concrete floors, for accommodating ground heave. FR2899829 concerns shuttering between concrete walls.

34 GB2120167 ('167) (Beldale Investment Ltd). Mr Bardo said he had come across this patent application and its subsequent patent many years ago in line with his work for Cordek. He said investigations were undertaken to see whether a product has emerged from the patent application. Nothing was found (although Cordek did not contact Beldale Investments). He submitted the information in the patent is therefore not common general knowledge.

35 '167 is clearly focussed on accommodating ground heave with an expanded plastic structure referred to as a "compressible separating material". The figures clearly show that structure can be hexagonal (figure 3, foamed honeycomb structure"). It is positioned between two boards, but that feature is not excluded by present claim 1. This document had originally been cited under lack of novelty as it discloses a hexagonal structure formed of expanded polystyrene. The objection was not pursued on account of the reference in claim 1 to "…*moulded from expanded plastic...*" - there is no reference in '167 to how the structure it discloses is formed and the examiner did not pursue his argument that formation by moulding was implicit in the disclosure of '167. This document thus discloses a hexagonal material made of expanded plastic for use in heave shuttering.

36 GB1605136 ('136). Mr Bardo said this is "*<u>the</u> (his emphasis) patent for what they call Clayboard*". He pointed out that the Clayboard product is a single ply paper/cardboard which disintegrates when it is wetted. Mr Bardo distinguished this from the safe-load/fail-load principle of the invention in suit. He accepted '136 clearly discloses a honeycomb structure but emphasised it is paper/cardboard. Mr Bardo submitted that the skilled person of my primary construction would not be aware of this patent but did say that such a person would be aware of the product which he indicated is on the Clayboard website. This is a critical point in relation to the common general knowledge of the skilled person of my primary construction.

37 I agree this document describes a paper-structure but I note the shuttering it describes offers hardly any resistance as it disintegrates due to moisture arising from the ground (clay). As Mr Bardo acknowledged it clearly shows a honeycomb cellular structure.

38 GB2095740 ('470) and GB2130524 ('524) are both in the name of Magnex Ltd. Mr Bardo pointed out that the address of the company (No.5 Upper Church St) in the Isle of Man was next door to the address (No. 6 Upper Church St) of Beldale investments, the proprietor of '167. I also note that the proprietor of '136 has an Isle of Man address. While this is interesting, if not curious, I do not think I can ascribe any particular relevance to that in the absence of other information as the postal address of a company and its field of activity may be different. Mr Bardo said the shuttering described in '470 was kept dry with a moisture-proof membrane and deliberately not wetted in contrast to the Clayboard technology. He said this was close to the Cordek model insofar as it was reliant on collapsing (under pressure). He submitted that Cordek has not come across this type of shuttering which include moisture proofing. Mr Bardo strenuously submitted these patent applications had "*certainly not translated into a product*".

39 I have considered both '740 and '524 which differ insofar as '740 relies on moisture proof shuttering while in '524 moisture penetration is important to activating the collapsing, similar to '136. Both refer to paper or cardboard as the shuttering material and both clearly disclose hexagonal arrays.

40 FR2899839 (Tonelli France SAS) and DE 20106810 (Frank GMBH & CO KG MAX) and WO2005/045158 (M A SYSTEME GES FUER KUNSTST) are of French and German origins. Mr Bardo submitted that the common general knowledge had to be in the UK and implied that as these documents were not from the UK then they could not be considered as common general knowledge. This point has been addressed by Arnold J relatively recently in *Re Generics UK v Warner Lambert*[3]. It is important to note that the knowledge must be common to the skilled person in the UK but that does not mean the technology has to exist in the UK; a UK addressee may often be familiar with technology abroad. The three documents in question here emanate from European firms and Europe is a single market. It seems reasonable to assume that things which are known in the construction industry within this market would be known within the UK. Thus, I think there is a *prima facie* case for regarding them as relevant. Mr Bardo pointed out that these documents related to honeycomb structures in paper card.

[3] Generics (UK) Ltd (t/a Mylan) v Warner-Lambert Company LLC [2015] EWHC 2548

41 I have reviewed a translation of ‘839 and find it discloses hexagonal shuttering for use between concrete walls. It says “*It is known in the prior art to place a panel, for example of polystyrene or cellular cardboard, between two walls during the formwork of the latter and then to remove said panel to create either a crawl space or a expansion joint*. However, it is not saying that the expanded polystyrene is plastic. The invention in ‘839 concerns a honeycomb of cardboard to be used in walls although it can also be laid horizontally.

42 DE20106810 is similar to ‘136 and ‘524 insofar as it refers to cardboard shuttering which is intended to collapse in being made wet by moisture and discloses hexagonal arrays.

43 WO2005045158 (‘158) A1. Mr Bardo said he had checked the legal databases (ESPACENET) and that this patent application did not progress. He submitted it was unlikely it gave rise to a product.

44 ’158 refers to ‘honeycomb’ shuttering in the construction industry in general and the abstract says it could be formed by “injection moulding” (a translation of the description did not reveal more information about the moulding technique). In earlier correspondence the applicant had argued that the form of moulding disclosed in ‘158 is not suitable for expanded plastics and the examiner had not pursued this point. Thus, I am content to accept that while this document discloses hexagonal shuttering, the moulding technique is not suitable for expanded plastics.

45 US5339578. It was acknowledged that this was only cited against a dependant claim (10) and does not disclose hexagonal structures.

46 Mr Bardo submitted that it was unfair and difficult for the applicant to be burdened with having to prove a negative - that something was not common general knowledge. However, I would say, where there is an evidential case for obviousness, then the burden of proof lays with the applicant to counter it (the Manual of Patent Practice 3.64 refers to the relevant authority[4] on this point). In all, I will consider the evidence in the round on the balance of probabilities. Mr Bardo referred to the Manual of Patent Practice (paragraph 3.33) in emphasising his point that the common general knowledge needs to be considered in the context of the entire field. He submitted that shuttering is vast market while heave shuttering is “niche” market. The thrust of Mr Bardo’s submissions was that someone in the art of shuttering would not be aware of the niche area of heave shuttering. I have taken these points into account in considering the common general knowledge of both of my constructions of the skilled person.

47 In the course of the hearing Mr Bardo suggested that hexagonal structures would not be known in the shuttering art itself. It transpired that Mr Bardo’s submission was that while someone in this art may be aware of different shaped structures *per se* they would not be aware of them being used in shuttering, in particular heave shuttering. Nor, submitted Mr Bardo, would one skilled in this art expect hexagonal structures to offer a particular advantage.

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[4] *Degussa-Huls AG v The Comptroller-General of Patents* [2005] RPC 29

48 I pressed Mr Bardo on this point as I considered it is especially important to my decision. I said the documents cited by the examiner do seem to illustrate that hexagonal structures are known in the shuttering art. He said "*what it is fair to say… within the construction industry, and that would probably apply to someone who is involved in shuttering particularly, people will know that one has rectangular arrangements, triangular structures and indeed hexagonal structure and they will be aware that hexagonal structures can work quite well"*.

49 So I return to the critical question. Are hexagonal shuttering arrays common general knowledge to the persons skilled in the art, of either my primary or secondary construction of such a person?

50 In answering this question in relation to my primary construction - a person skilled in the art of heave shuttering - I think it is reasonable to assume that the narrower the field the more likely the skilled person would be aware of and indeed take an interest in the developments in that field. I am conscious that the applicant has submitted there are essentially two main players in the UK in heave shuttering and that Cordek has approximately 50% of the share of the market. It can be assumed therefore that the other player, the manufacturers of Clayboard, would have approximately half of the market. Given that the applicant accepted that the skilled person in this specialist field would have been aware of Clayboard's hexagonal heave shuttering, in my view it is not unreasonable to assume that a sufficient body of workers in that field would be aware of hexagonal shuttering arrays. To support this view, I note that Mr Seaton acknowledged he was aware of the Clayboard product.

51 I note the patent relating to Clayboard was filed in 1977. In his witness statement Mr Seaton said the Clayboard product has been on sale for more than twenty years.

52 The clear message from the case law is that the skilled person is to be regarded as unimaginative and that such a person is sufficiently interested in their work and may be a team. Mr Bardo acknowledged that the skilled person in heave shuttering would be aware of Clayboard, although he was keen to point out it would have been known as a cardboard product.

53 From considering all of the evidence before me, minded of the *General Tire* point, I believe it is reasonable to assume that the person skilled in the art of heave shuttering would be aware that hexagonal structures could be used in heave shuttering.

54 In the alternative, having considered the prior art from the perspective of my secondary construction of the skilled person, taking into account the *General Tire* point, it seems reasonable to assume that hexagonal shuttering arrays would not be unfamiliar to someone in the construction industry in general, especially as Mr Bardo had indicated that such a person would be aware of hexagonal arrays that could be deployed in shuttering *per se*.

Identify the inventive concept of the claim in question or if that cannot readily be done, construe it

55 I am conscious of Mr Bardo's submissions about the importance of moulding to the applicant's invention and have reflected this in the two aspects of the inventive concept which I think can be simply stated as: an array of hexagonal cells made of expanded plastic, which has been formed by moulding and is suitable for use as shuttering in casting slabs or beams. Mr Bardo was content with this approach.

Identify what, if any, differences exist between the matter cited as forming part of the "state of the art" and the inventive concept of the claim or the claim as construed;

56 The examiner cited GB2390390 ('390) (Cordek) as the state of the art. This document discloses heave shuttering made by moulding expanded plastic in which the arrays have rectangular cells.

57 The examiner said that the difference between the state of the art as exemplified by '390 is that the inventive concept is characterised by hexagonal arrays. Mr Bardo agreed with this, although I note in his submissions on step 4 he set out to distinguish the differences in the process for making hexagonal arrays compared with rectangular arrays.

Viewed without any knowledge of the alleged invention as claimed, do those differences constitute steps which would have been obvious to the person skilled in the art or do they require any degree of invention?"

58 In saying that the invention is obvious on account of '390 the examiner pointed to a passage in it on page 12 lines 24-34 which reads:

> "*However, the thickness, number, height and/or layout of the support walls 6,7 can be varied, having regard to the conditions under which the walls are required to break up and bearing in mind that a change in the thickness and number of walls will alter the surface area over which the walls contact the substrate. For example, the size of the cells defined by the walls can be decreased by increasing the number of shorter support walls 7 and/or increasing the number of longer support walls 6. Alternatively, or in addition, the shape of the cells could be altered*".

59 The examiner's view is that '390 teaches that the rectangular cells in it could be made in other shapes, which he implies include hexagonal shapes.

60 Mr Bardo distinguished the method by which the moulded rectangular array was made in '390 from the moulding technique disclosed on the passage on pages 24-25 of the description which I have already referred to in paragraph 21 above.

61 Mr Bardo said the moulding technique for rectangular cells would simply not work for hexagonal cells. He pointed out that each cell in the rectangular array in '390 was formed by interlocking mould projections coming in from each side to the expanded

plastic in the moulding process. One projection moulds one cell. In the application in suit, the mould projections are tapered and two projections, each applied from opposing sides, create a single cell. Mr Bardo said this technique allows the mould to be withdrawn and for the walls to be parallel. The rationale of moulding hexagonal arrays is supported by Mr Seaton's witness statement. When asked if an hexagonal array could be formed in another way Mr Bardo indicated it could but the process of steaming to expand the polystyrene would be affected and, in turn, the uniform thickness of the walls would be compromised. On this basis, I am happy to accept that the moulding process used to form the hexagonal arrays described in suit differs significantly from that which is used to form rectangular arrays in '390. In my view, there is nothing in the cited art that suggests that the moulding process described in suit is obvious.

62 Mr Bardo also submitted that there is nothing in the prior art to suggest that hexagonal arrays are better than or offer advantages over rectangular arrays. He also distinguished the use of hexagonal arrays in paper/cardboard from arrays in plastics. I took this to mean that the skilled person would not be motivated to try making hexagonal arrays. He submitted that the skilled person would recognise these materials have different characteristics and different conditions to collapse - e.g. the requirement of wetting of cardboard arrays to enable them to collapse. This was another reason, said Mr Bardo, why the skilled person would not consider hexagonal moulded plastics arrays as being 'obvious to try', one well-established test for obviousness[5].

63 There are several legal tests pertaining to the fourth Pozzoli question. These are referenced in the Manual of Patent Practice. I am particularly conscious of Jacob LJ's remarks in the Court of Appeal in *Conor v Angiotech*[6] which the Supreme Court acknowledged in their judgement on that case. His learned lordship said in referring to Lord Diplock's remarks in the famous case of the Johns-Mansville patent:

> *44. I also take the view that one can overelaborate a discussion of the concept of "obviousness" so that it becomes metaphysical or endowed with unwritten and unwarranted doctrines, sub-doctrines or even sub-sub-doctrines. This can be coupled with a massive citation of authority (the opinions in the 84 printed page, 203 paragraph judgment, in Hässle have 307 footnotes, many of which are citations of authority); Diplock LJ warned against this in Johns Manville saying:*
>
> *"I have endeavoured to refrain from coining a definition of 'obviousness' which counsel may be tempted to cite in subsequent cases relating to different types of claims."*
>
> *I interpolate to say, he failed there! Continuing:*
>
> *"Patent law can too easily be bedevilled by linguistics and the citation of a plethora of cases about inventions of different kinds. The correctness of a decision upon an issue of obviousness does not depend upon whether or not the decider has paraphrased the words of the Act in some particular verbal*

[5] Johns-Mansville Corporation Patent [1967] RPC 479

[6] Angiotech Pharmaceuticals & ANR v Conor Medsystems Inc Court of Appeal [2007] EWCA Civ 5

formula. I doubt whether there is any verbal formula which is appropriate to all classes of claims."

45. That reminder cannot be repeated too often. The words of the law are simply:

"An invention shall be considered as involving an inventive step, if, having regard to the state of the art, it is not obvious to a person skilled in the art" (Art 56 EPC).

In the end the question is simply "was the invention obvious?" This involves taking into account a number of factors, for instance the attributes and cgk of the skilled man, the difference between what is claimed and the prior art, whether there is a motive provided or hinted by the prior art and so on. Some factors are more important than others. Sometimes commercial success can demonstrate that an idea was a good one. In others "obvious to try" may come into the assessment. But such a formula cannot itself necessarily provide the answer. Of particular importance is of course the nature of the invention itself".

64 Set against this backdrop, the question boils down to whether in light of the common general knowledge of the skilled person in the art of heave shuttering (my primary construction of the skilled person) making hexagonal arrays of heave-shuttering by moulding plastic involves a degree of invention to warrant an “inventive step”?

65 I think the invention here, which is an expanded plastic product but also characterised by the process of making it by moulding, does involve an inventive step. There is no teaching in either the state of the art document or in the documents cited to demonstrate common general knowledge that hexagonal arrays can be made by moulding plastic. I am convinced by the argument that moulding expanded plastic hexagonal arrays requires a different technical approach to moulding rectangular arrays. Thus, while the claim is not limited to the precise method of the disclosed moulding process I consider that the inventive concept underlying the claim is nonetheless inventive - nothing in the cited art teaches towards this concept.

66 I can readily answer the fourth question on the basis of my second construction of the skilled person - the invention is not obvious. While a person in the construction industry *per se* may well be aware that hexagonal arrays could be used to create shuttering I cannot see a motivation for that person to create such arrays for heave-shuttering from moulded plastic, given that the disclosed methods of moulding rectangular structures could not readily be applied to moulding a hexagonal shape.

67 I therefore hold that claim 1 involves an inventive step. It follows that claim 20, a method claim which produces the shuttering of claim 1, also involves an inventive step.

Conclusions

68 I hold that claim 1 is clear and supported.

69 I hold that the independent claims, claim 1 and claim 20, involve an inventive step. It follows that the dependant claims, 2-17, 19 (in part) and claims 21-26 also involve an inventive step.

70 Claims 18 and 28 are omnibus claims. As a result of the Patents (Amendment) (No.2) Rules 2016, from 6 April 2017 it is no longer possible to include omnibus claims in UK patent applications, unless this is the only way to define the technical features of the invention. In my view this rule applies here and consequently claims 18 and 28 refused.

71 I remit the application to the examiner for further processing.

Appeal

72 Any appeal must be lodged within 28 days after the date of this decision.

Jim Houlihan
Deputy Director, acting for the Comptroller