

18 May 2007

PATENTS ACT 1977

BETWEEN

Stuart Morrison Claimant

and

Seetru Limited Defendant

PROCEEDINGS

Application under section 72 of the Patents Act 1977 for the revocation of
patent number GB2388648

HEARING OFFICER

Peter Back

DECISION

Background

1. An application for revocation of UK patent number GB 2388648 (“the patent”) in the name of Seetru Ltd (“the Defendant”) was made by Stuart Morrison (“the Claimant”), on 22nd November 2005.
2. The patent was filed on 20th March 2003, claiming a priority date of 22nd March 2002, and was granted on 6th July 2005. The invention relates to a valve sealing arrangement and the Claimant alleges that in view of certain prior art disclosures the invention is both lacking in novelty and would have been obvious to a person skilled in the art at the priority date. The Claimant further alleges that many of the features of the patent are not entitled to the priority date claimed, as the priority document is brief, and without figures or claims.
3. The Claimant’s case alleging lack of novelty and inventive step relies upon several physical exhibits (examples of valve sealing arrangements), catalogue pages relating to valve sealing arrangements and a number of patent documents. The Claimant also filed some documents, catalogue pages, and observations under section 21 during the pre grant proceedings.

4. The Defendant filed a counterstatement on 13th March 2006, denying all of the allegations and proposing unconditional amendments to the claims. In a supplementary statement however, the Claimant alleged that a key component of these amendments is not adequately disclosed in the description. The Defendant then filed a supplementary counterstatement and second supplementary counterstatement denying all allegations.
5. Following the filing of evidence including witness statements from both sides, the parties were agreed that a decision on the papers would be acceptable in this case and this decision is produced on that basis.

The issues

6. There are several issues to be considered here. The most straightforward of these appears to be that of novelty and I will consider this first. If I find the claims novel, I will go on to consider inventive step, and then if necessary to the adequacy of disclosure and entitlement to the priority date claimed.

The Law

7. The comptroller's powers to revoke a patent on the application of another person are set out in section 72(1). With respect to the validity of the claims and completeness of disclosure, the relevant parts read as follows:

Subject to the following provisions of this Act, the court or the comptroller may by order revoke a patent for an invention on the application of any person (including the proprietor of the patent) on (but only on) any of the following grounds, that is to say -

- (a) the invention is not a patentable invention;*
- (b) ...*
- (c) the specification of the patent does not disclose the invention clearly enough and completely enough for it to be performed by a person skilled in the art;*
- (d) the matter disclosed in the specification of the patent extends beyond that disclosed in the application for the patent, as filed, or, if the patent was granted on a new application filed under section 8(3), 12 or 37(4) above or as mentioned in section 15(9) above, in the earlier application, as filed;*
- (e)...*

Novelty

8. Further to section 72(a), I must also look to section 1(1) which defines the requirements for a patentable invention, namely that:

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

- (a) the invention is new;*

(b)...

(c)...

(d)...

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

Section 2(1) goes on to state that:

An invention shall be taken to be new if it does not form part of the state of the art.

The state of the art itself is further stated in section 2(2) to comprise;

all matter (whether a product, a process, information about either, or anything else) which has at any time before the priority date of that invention been made available to the public (whether in the United Kingdom or elsewhere) by written or oral description, by use, or in any other way.

9. For the purposes of this analysis, I shall assume the priority date granted to this patent is valid, though I am mindful of the fact that this is contested by the Claimant. It should however be noted that nearly all of the prior art on which the Claimant relies predates the earliest priority date of the patent in suit. The only piece of prior art raised which does not clearly predate the patent in suit is a PCT publication, WO 02/25150 which was published 28th March 2002. If this PCT document turns out to be critical to these proceedings I will need to address the issue of priority.

The invention

10. As mentioned above, the invention relates to a valve sealing arrangement, specifically an arrangement of an elastomeric seal disposed in a metal valve assembly. For an illustration of the part, see figure 1 below. The Defendant has proposed unconditional amendments to the existing claims, and it is the proposed amended claims which will be considered now. There is only one independent claim.
11. Proposed amended claim 1 reads as follows (the features added by the proposed amendment are underlined):
1. A valve sealing arrangement comprising an elastomeric seal chemically bonded to the base and circumferential wall of a recess in a valve plunger, the seal, in use, being co-operable with a valve seat, wherein a rim portion of the seal protrudes from a sealing face of the plunger and the sealing face, in use, is arranged to come into metal-to-metal contact with the valve seat whereby, when the valve is closed, the seal is distended inwardly with respect to the perimeter of the recess and a pressure medium acts radially outwards against the rim thereby providing an effective hydrostatic seal.

12. As stated above, the Claimant alleges that the amendments to this claim are not adequately disclosed in the application as filed. However, as the amended claim is narrower than the existing claim by the addition of the underlined features, if it is found to lack novelty, then the original claim must also fail. If the amended claim is found to be novel then the issue of support will be considered in full.

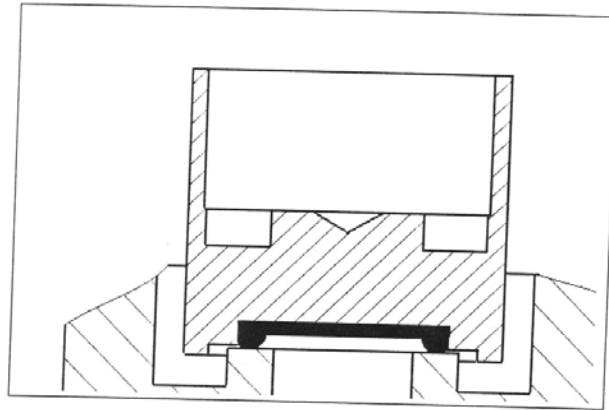


Figure 1. A diagram from the Seetru Patent, showing the valve plunger (top), sealing element (shaded black) and the valve seat/sealing face (bottom).

Novelty

13. The Claimant has based his case for lack of novelty on a number of items of evidence and I shall deal with these in the order they are presented as far as is necessary to come to a decision.
14. The first exhibit referred to by the Claimant is a type of valve manufactured by Swagelok. This type of valve is referred to by the Claimant as the R4 type, and I shall also refer to it in this manner. An example of this valve has been provided with a cut away section such that the workings may be viewed (Exhibit 1). A catalogue page from Swagelok has also been provided (Exhibit 2) which shows a valve with the same part number in exploded views and cross section. On comparison the part illustrated on that page appears identical to the first exhibit and the page is dated January 1997. The Defendant has not disputed this date, so I shall accept it as indicative of the date that this type of valve was made available to the public. Exhibit 3 provided by the Claimant is a component part of an R4 valve, which has also been cutaway for examination. This part is referred to in Exhibit 2 as the 'bonded poppet'.

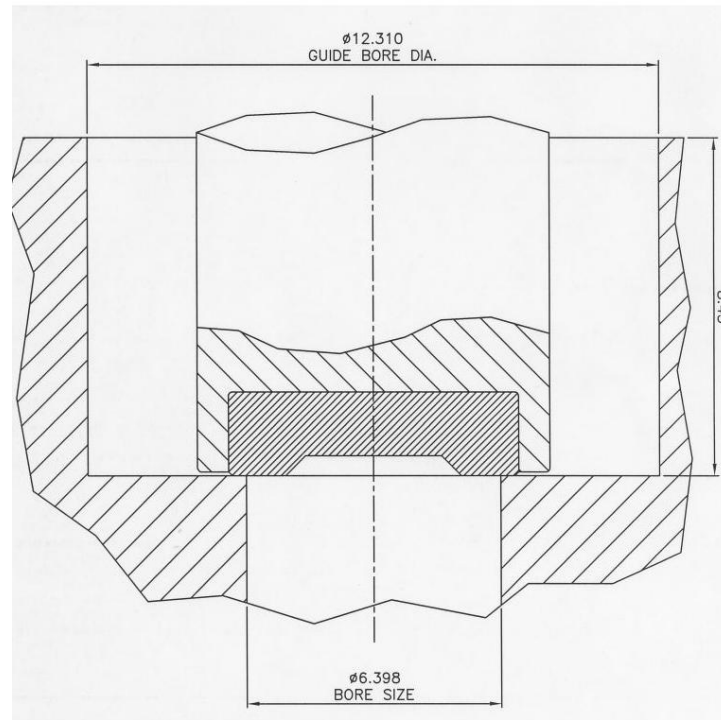


Figure 2. A sectional drawing of the R4 valve provided by the Claimant, showing the valve plunger (top), the sealing element (illustrated with dense hatching) and the valve seat/sealing face (bottom).

15. The existence of these Swagelok valves was brought to the attention of the examiner who assessed the patent pre-grant, as they were referred to in observations filed by the Claimant under section 21. It should be noted however that the quantity and detail of material that is presented to me during this action considerably exceeds that made available to the examiner.
16. The R4 valve is a safety release valve containing a poppet, to which is attached a Viton (RTM) sealing element. Viton (RTM) is a type of elastomer marketed by DuPont. Exhibit 2 refers to the sealing element and poppet together as a 'bonded poppet' and The Claimant suggests that this assembly may be considered a 'valve plunger' in the terminology of the patent claim. No information is provided in Exhibit 2 regarding how the sealing element is bonded to the poppet, but the Claimant states that it is chemically bonded, and on inspection I agree. There is no apparent mechanical means to retain the sealing element onto the face of the poppet (although there is an annular groove into which the seal extends). It would also be unusual for the expression 'bonded' to be used to describe a feature that is only restrained mechanically.
17. The sealing element of R4 bonded to the poppet is set into a recess in the face of the poppet and comprises a disc with a circumferential rim portion protruding from the recess, such that when the poppet is in metal to metal contact with the valve seat, the protruding rim of the sealing element is compressed. The Claimant states that due to the elastomeric nature of this sealing element, it will therefore be distended inwardly with respect to the perimeter of the recess, and I agree this is the case. The outer perimeter and

underside of the sealing element are clearly constrained by the edges of the recess and so the material displaced, when the valve compresses the sealing element, must move inwards.

18. Having addressed the more self evident features of the R4 valve, we now come to those which are contested by the Defendant. The first of these concerns whether or not the pressure medium acts radially outwards against the rim of the seal in the R4 valve. Mr Wilson in his supplementary counterstatement for the Defendant states that “...*there can be no force on this seal from the pressure medium which is anywhere close to radially outwards.*” He does not however go on to justify this statement, and in fact the second supplementary counterstatement from the Defendant muddies the water still further by referring (on page 3) to part of the seal being “...*pushed radially outwards against the side of the valve bore by fluid pressure.*” These comments read in context do not admit that the pressure acts against the rim portion of the seal specifically, but do seem to accept that a radial force is present.
19. From inspection of the physical item, in the closed position, the pressure medium contained by the R4 valve will act both towards the face of the poppet (the flat face of the sealing element) and against the angled face provided by the protruding rim of the seal. As with any force exerted on an angled surface, this can be resolved into a vertical component and a radial component, the latter of which will necessarily act against the compressed rim of the sealing element. It is possible that this force may be small, as the area of the rim exposed to the pressure medium is small, but a radial force acting outwards against the rim of the seal will nevertheless exist in the R4 valve.
20. The proposed amended claim 1 recites that the seal is bonded ‘*to the base and circumferential wall*’ of the recess and that the arrangement in use provides ‘*an effective hydrostatic seal*’. It is not immediately clear whether or not the R4 valve comprises these features, and this has proved to be the main focus of arguments from both sides.
21. To take the first point first, the Claimant alleges that the R4 valve is clearly bonded to both the base and the circumferential wall. They further allege that it would be near impossible to coat one surface with a bonding agent while avoiding the other surface(s), especially in a relatively small component. The Defendant who has examined the physical exhibits at the UK Intellectual Property Office, states that it was impossible on that examination to determine whether the seal of the R4 valve is bonded on one or more surfaces. The Defendant goes on to state that precision is required in manufacturing parts of this type and suggests bonding techniques which are applied solely to the surfaces to be bonded as examples of how this precision may be achieved.
22. The Defendant has however produced no evidence or compelling argument that the R4 seal is not bonded to both walls, and I have to say on inspection of both exhibit 1 and exhibit 3 I am of the opinion that this is in fact because the R4 seal is so bonded. Although the sealing element in the R4 valve is small and clearly fits snugly into the recess, the sectioned example in exhibit 3

would allow relative movement to highlight whether or not the seal was being retained on one surface or the other merely by the effect of close mechanical tolerances. On the balance of probabilities then I find that the R4 seal is bonded to both the base and circumferential surfaces of the recess.

23. The remaining feature to assess is whether or not the arrangement of the R4 valve provides an *'effective hydrostatic seal'* as required by claim 1 of the patent. Unlike the forgoing features, this requires me to give detailed consideration to claim construction. While no one can fairly dispute the meaning of the earlier parts of the claim, the meaning of the words *'effective hydrostatic seal'* is less immediately apparent.
24. The first thing I must address is the meaning of the word *'hydrostatic'*. According to a witness statement dated 11th January 2007 from Dr Gary Wilson acting for the Claimant, the term *'hydrostatic'* is not in general use within the seal or valve design industries. Mr Stuart Morrison in his witness statement of 11th January 2007, also for the Claimant, goes on to state that the Defendant is using the term hydrostatic to refer to the pressure activated sealing function such as is often used in O-ring type seals. This is where in use the pressure medium acting on the seal creates a force between part of the seal and a valve seat such that an increase in pressure leads to an increase in the sealing effect (up to a point). On reading the submissions by the Defendant, this is clearly their intended meaning, but of course a reader of the patent will not usually be privy to any proceedings that have gone on behind the scenes, and the wording of the patent must stand on its own.
25. The matter of claim construction was extensively considered by Hoffmann LJ in the case of *Kirin Amgen Inc v Hoechst Marion Roussel Ltd* [2004] UKHL 46. The key point made in that judgment was that the approach in construing a claim should be to establish *"what a person skilled in the art would have thought the patentee was using the language of the claim to mean."*
26. On reading of the proposed amended claims alone, I do not believe a man skilled in the art would necessarily understand hydrostatic to have the meaning intended by the Defendant. I have heard conflicting views on what the word "hydrostatic" means and the wording of the claims taken alone leaves room for some ambiguity.
27. The key principles of claim construction were listed by Jacob LJ in *Technip France SA's Patent* [2004] RPC 46 in paragraphs 41(a)-(k). This list was approved by Lord Hoffmann in *Kirin-Amgen* apart from subparagraph (e), where Lord Hoffmann held that there is no presumption about the width of the claims when considering fairness to the patentee. In *Mayne Pharma v Pharmacia Italia SpA* [2005] EWCA Civ 137, Jacob LJ summarised the principles, with the pertinent paragraphs (a) and (b) reading as follows:

*"(a) The first, overarching principle, is that contained in article 69 itself.
(b) Article 69 says that the extent of protection is determined by the terms of the claims. It goes on to say that the description and drawings shall be used to interpret the claims. In short the claims are to be construed in*

context.”

28. There are 4 references to the word hydrostatic in the description of the patent. On page 2 the description refers to *‘a sensitive hydrostatic self-sealing action’*. On page 4 there are references to *‘a hydrostatic self sealing force’* and *‘the hydrostatic action’*. Finally page 7 refers to *‘a sensitive hydrostatic sealing action’*.
29. The most illuminating of these references is the first of those on page 4. After referring to the *‘hydrostatic self sealing force’*, the description goes on to state that *‘the seal crown although bonded into the recess acts as part of an O ring and will provide the well-known self sealing properties associated with O rings’*. This to my mind resolves the ambiguity and a reader of this patent would take the term hydrostatic to refer to the pressure activated sealing effect commonly found in O ring seals.
30. If we accept that the reader will, in context at least, understand the intended meaning of the word hydrostatic, what would they understand by the entirety of the phrase *‘effective hydrostatic seal’*? The Claimant has argued that this is unclear. Their line of argument stems from the contention that both the R4 seal and the arrangement claimed by the Defendant will both, in use, rely on elements of both hydrostatic sealing, and compression sealing (sealing arising solely from the force with which the valve plunger compresses the seal element against the valve seat). Accordingly they argue that any sealing arrangement which contains some element of hydrostatic sealing may fall within this requirement of the claims.
31. This gives rise to the obvious question, what would the man skilled in the art understand by the presence of the word *‘effective’* in the claims?
32. The Defendant proposes that the presence of some degree of hydrostatic sealing quite emphatically does not make the seal one of hydrostatic sealing. In his witness statement of 16th October 2006, Otto Varga (for the Defendant) states that *“The skilled man would readily be able to decide whether he is dealing with a hydrostatic seal or not...”* He goes on to say *“It is my view that all of the citations brought forward by the Applicant for revocation, with the exception of past Seetru patents, are not genuine hydrostatic seals operating on the well known self sealing properties of an O-ring, but are essentially squeeze seals with possibly minor hydrostatic action mixed in, without in any way being dominant in the functioning of the system.”*
33. The Claimant however is of the opinion that the presence of some degree of hydrostatic sealing would in fact constitute an effective hydrostatic seal, or at the very least the term is unclear. The Claimant points me to the decisions in Birtcher Medical Systems’ Patent (BL 0/70/96) and Minnesota Mining’s Patent ([1997] RPC 135) which both report cases where patents were found to be invalid due to lack of sufficiency. The Claimant suggests that, as the Patent is silent on the issue of how an effective hydrostatic seal may be judged, the skilled man would not be able to judge the breadth of the claim and so the claim must be invalid.

34. The view of the Defendant is that the hydrostatic sealing must be a deliberate intention of the design, any incidental hydrostatic effect would not infringe. This however does not seem right. For an assessment of infringement to depend on the intention or motive behind a design, rather than the design of the article itself would leave the scope of the claims continuously open to argument. Either the device is within the claim or it is not.
35. Mr Varga for the Defendant and Mr Morrison for the Claimant are in direct opposition over this matter and so I must decide between them. Both Mr Varga and Mr Morrison have apparently worked in the field of industrial sealing for many years and I do not doubt their expertise. The matter of whether or not the claim is clear however is not one of expertise in sealing, but in claim construction. On the balance of the evidence, I cannot agree that the phrase 'effective hydrostatic seal' would reasonably be interpreted to include deliberate hydrostatic effects, but not incidental ones. The inclusion of the word effective is therefore unclear, and the proposed amended claim including it cannot be valid.
36. Disregarding the unclear limitation provided by the word 'effective', the claim would therefore cover a valve sealing arrangement fulfilling the previous requirements where there is some element of hydrostatic sealing. If the R4 valve therefore includes a hydrostatic sealing component it will anticipate the claim.
37. So the final piece of the jigsaw as far as novelty is concerned is to determine whether or not the R4 valve arrangement gives rise to some hydrostatic sealing force. In his statement of 16th October 2006, Otto Varga (for the Defendant) denies that the R4 valve arrangement gives rise to any hydrostatic sealing effect. He states that this is for two main reasons. Firstly the sealing element (in particular the bead or rim portion) is relatively wide and only presses down on the valve seat near its outer edge, so any radial force could not be transmitted in a hydrostatic manner through the sealing element to press the seal into the valve seat. Secondly it is claimed that the sealing element is crushed against the inner edge of the valve seat where it meets the valve bore, deforming the element and further preventing it from transmitting forces through itself in a hydrostatic manner.
38. Earlier in his evidence Mr Varga also states that a key indication that hydrostatic sealing is taking place is that (referring to the force required to close the valve so metal to metal contact occurs) "*The force required on the plunger to bring about this contact (and to constrain the rubber to allow this to occur) is small compared with the force required to resist the fluid pressure*"
39. For the Claimant Mr Morrison maintains in his statement of 11th January 2007 that hydrostatic sealing does take place in the R4 valve. The Claimant has provided a further sectioned example of this valve (Exhibit 24) and refer to this in their arguments.
40. With regards to the width of the sealing element, Mr Morrison refers to the

width as being on average 1.75mm and this appears on inspection to be correct. Mr Morrison further states that this is a comparable width to that of the seal utilised in the patent, and states that a soft elastomer will clearly be able to deform and transmit force when so proportioned. There are no measurements in the patent itself, but the figures therein give an idea of the proportions involved. The width of the bead in the patent does appear to be smaller, proportionally, than that of the R4 valve, but not by much. It would certainly not seem to be a difference of such magnitude that no hydrostatic effect would exist in one, but a considerable effect in the other. I can accept that one may produce a more pronounced effect than the other due to its proportions, but transmission of force must I think occur in both.

41. Regarding the intersection of the edge of the valve bore with the sealing element, Mr Morrison states that this will not affect the hydrostatic sealing effect produced by the seal to any degree. He states that any preference for avoiding such intersection with edges is actually to avoid damage to the elastomer from a sharp edge, and not due to any effect on the hydrostatic sealing properties of the resultant seal. Mr Morrison goes on to provide a sketch (Exhibit 23) which he claims shows that, when closed, the R4 valve provides a land for the elastomer seal to press against, and the depth of the recess in the centred of the seal will allow a radial pressure force and subsequent hydrostatic sealing force to act on that land through the seal.
42. Finally, Mr Morrison states that only the slightest force is required to achieve metal to metal contact between the valve plunger (or poppet) and the valve seat in the R4 valve. Mr Morrison claims that from physical tests this force is in the region of 1 Newton, certainly a small force when it is considered the R4 valve is intended for use with pressures up to 103 bar (from specifications in Exhibit 2).
43. Having considered all of the evidence from both sides, it seems to me that the R4 valve must, in use, produce at least some element of hydrostatic sealing force. It may well be that this is a minor component compared to the compressive sealing arising from the force axial to the valve plunger, but as discussed above this is immaterial. As some hydrostatic effect is present, the R4 valve anticipates the proposed amended claim 1.
44. Although I have not received submissions in any detail on the dependent claims, there has been an assertion by the Claimant that they are lacking in novelty and inventive step and it is necessary to give some consideration to them here. Staying with the requirements of novelty for a moment, without any in depth analysis it is clear to see that the essential features of many of the (proposed amended) claims are all found in the R4 valve.
45. Claim 2 requires that the sealing element has a base portion comprising a thin film of elastomer bonded to the recess. As discussed above, the R4 valve sealing element is constructed in this way.
46. Claim 3 requires that the rim portion has a bead. The rim portion of the R4 seal is very close in cross section to that of the claimed invention. They both

appear to comprise a bead, and so the R4 seal anticipates claim 3.

47. Claim 4 requires an annular groove forming part of the recess, as found in the R4 valve.
48. Claim 5 requires bonding to both the circumferential wall and the base of the groove, as found in the R4 valve.
49. Claim 10 requires the cross section of the recess to be rectilinear, curvilinear or arcuate in form. The recess in the R4 valve has a rectilinear cross section.
50. Claim 11 requires the sealing face of the plunger inside the groove to be coplanar with the face outside of the groove. In the R4 valve the faces are coplanar.
51. Claim 11b (due to a numbering error in the amended claims submitted to me, the numbers 10 and 11 are repeated) requires that the sealing face of the plunger within the area circumscribed by the groove is recessed with respect to the face of the plunger outside of said groove. The R4 valve contains this feature.
52. Claim 19 requires the use of a valve as previously defined in a safety valve. The R4 valve is sold as a safety valve, and so this claim is also anticipated.
53. The claims detailed above accordingly all then lack novelty in light of the prior art.

Inventive step

54. Although I have found that the patent is invalid for lack of novelty, for completeness, I will now also briefly consider whether or not the claimed invention satisfies the requirements for inventive step laid out under section 1(1)(b).
55. Obviousness is usually addressed using the four-step approach set out in *Windsurfing International Inc v Tabur Marine (Great Britain) Ltd* [1985] RPC. This directs us to first identify the claimed inventive concept. The second is to identify the common general knowledge known to a skilled but unimaginative addressee in the art at the priority date. The third step is to identify the differences, if any, between the matters cited as being “known or used” and the alleged invention. The final step is then to decide “whether, viewed without any knowledge of the alleged invention, those differences constitute steps which would have been obvious to the skilled man or whether they require any degree of invention.”
56. Taking claim 1, we may take the inventive concept as being that defined by the claims and construed as above. The common general knowledge will be that held by engineers in this industry and will include the functioning of O-ring type seals, general constructional options, knowledge of elastomers etc. When we come to identify the differences between the matter known and

used (the R4 valve) and the claimed invention, then there is to my mind no difference. As such, claim 1 must necessarily lack inventive step over the prior art.

57. Claims 6,9 (again due to a number error there is no proposed claim 7 or 8) and 10b recite merely minor constructional details, there is no reason to think any of these comprise an inventive step. The use of a disc element securable to the plunger as required in claim 12 is known in the prior art and may be considered common general knowledge. An example of this may be found in Exhibit 8 submitted by the Claimant.
58. Exhibit 8 is a physical sample of a disc with sealing element bonded thereto, designed to be affixed to a valve plunger. The part is stated by the Claimant to come from a 716 series Full Lift safety relief valve from IMI Bailey Birkett Ltd. Exhibit 9 is a catalogue page from IMI Bailey Birkett Ltd showing a valve of the same type. The page carries a reference which indicates that it was published in 1994. In the absence of any argument to the contrary from the Defendant, I will accept this as evidence of the date on which the information in that page was available to the public.
59. As such, the use of this construction, where a disc bonded to the seal may be then affixed to the valve plunger, and the minor variants detailed in claims 13-17 also appear to lack the requisite inventive step over the prior art.

Conclusion and opportunity for amendment

60. After consideration of all of the evidence provided and for the reasons set out above, I find that all of the claims of the patent are invalid for lack of novelty and inventive step. Accordingly there is no need for me to go on to consider entitlement to the priority date. The Defendant did not explicitly request an opportunity to amend the patent but I think that since this is a decision on the papers, I should give them an opportunity to do so. I shall allow the Defendant two months in which to file amendments under section 75 should he so wish, failing which I shall revoke the patent. If amendments are filed, I will require them to be advertised and will give any directions necessary for the subsequent procedure.

Costs

61. Neither party has made any submission or request on the matter of costs, either in their statement of case, or in the correspondence on file. The Patent Hearings Manual says that the hearing officer should only award costs to a party if that party has requested an award. However, I take the view that that guidance is given in the context of an attended hearing where parties normally take the opportunity to make submissions on costs at the close. Since this is a decision on the papers, no such opportunity arose and accordingly I will allow the parties to make submissions on costs. I will allow the parties two months in which to make such submissions to coincide with the period I have allowed for the filing of amendments under section 75.

Appeal

62. Under the Practice Direction to Part 52 of the Civil Procedure Rules, any appeal must be lodged within 28 days.

P Back

Divisional Director acting for the Comptroller