



BL O/073/05

21 March 2005

PATENTS ACT 1977

BETWEEN

Applied Energy Products Limited

Claimant

and

Zip Heaters (UK) Limited

Defendant

PROCEEDINGS

Application under section 72 for revocation of patent number GB 2366358

HEARING OFFICER

D J Barford

DECISION

Introduction

- 1 Patent application number GB 0116897.0 was filed on 11 July 2001 claiming priority from two earlier applications, GB 0017453.2 filed on 18 July 2000 and GB 0022884.1 filed on 19 September 2000. The application was granted as patent number GB 2366358 (“the patent”) on 16 October 2002 under the title “Improvements relating to water heaters”.
- 2 An application for revocation was filed by the claimant, Applied Energy Products Limited (“AEP”), on 4 December 2003. The claimant has applied under section 72(1)(a), on the grounds that the invention is not patentable since it is not new and does not involve an inventive step; and under 72(1)(c), on the grounds that the specification does not disclose the invention clearly enough and completely enough for it to be performed by a person skilled in the art.
- 3 In response the defendant, Zip Heaters (UK) Limited (“Zip”), filed a counterstatement on 11 February 2004 disputing the claim and seeking a certificate of contested validity under section 65. The counterstatement includes a conditional offer to amend, which was advertised in the Journal on 31 March 2004 without opposition. Finally, the claimant filed a supplementary statement on 2 April 2004.
- 4 Evidence having been filed with the statement, counterstatement and supplementary statement, neither party wished to file further evidence; and after some exchange of correspondence the parties agreed that a decision should be made on the papers.

The evidence

- 5 Evidence in chief was submitted on behalf of AEP, which formerly traded under the name of Redring, by the following of its employees: Mr Barry Tanner, the Redring brand manager; Mr Philip Rhodes, a project manager; and Mr Noel Murray, technical director; and by Mr Geoff Egginton, marketing development director of a company called Albion Water Heaters Limited (“Albion”).
- 6 Evidence was submitted on behalf of Zip by Mr John Vallis, the inventor named in the patent and technical consultant to Zip.
- 7 Evidence in reply was submitted on behalf of AEP by two more employees of Albion: Mr Steven Woollas, product manager; and Mr David Whatton, a factory operative; and also by Mr Clyde Brown, formerly managing director of a company called Stiebel Eltron Ltd (“Stiebel”).

The patent

- 8 The patent relates to a system comprising a lower reservoir in which water is heated and an upper reservoir from which cold water is fed to keep the lower reservoir topped up. An expansion pipe passes upwards from the lower reservoir back into the upper reservoir to return hot water forced out of the lower reservoir by expansion.
- 9 The patent has fifteen claims. The invention set out in the main claim, claim 1, involves providing a sleeve around the expansion pipe to provide an air gap which reduces heat transfer between the expansion pipe and the cold water in the upper reservoir.
- 10 The claims appendant to claim 1 relate in the main to features of the sleeve or expansion pipe; although there are also claims to a device for keeping the upper reservoir topped up with cold water; and to an arrangement for sensing the temperature in the upper reservoir and actuating an alarm or flow control valve if the water gets too hot.

Claim 1

- 11 This reads as follows:

1 A water heater comprising upper and lower reservoirs in which cold water is stored in the upper reservoir for feeding the lower reservoir which contains water heating means, with an interconnecting passage for transferring cold water from the upper reservoir to the lower to maintain the level therein and an expansion pipe to permit heated water forced out of the lower reservoir by expansion to return to the upper reservoir, wherein the expansion pipe extends into and upwardly through the upper reservoir and means is provided to thermally separate the body of water in the upper reservoir from the expansion pipe extending upwardly through the upper reservoir, thereby to reduce the transfer of heat from the expansion pipe to the water in the upper reservoir, said means

comprising a sleeve which surrounds the expansion pipe to at least the depth of the water in the upper reservoir and wherein the sleeve is spaced from the expansion pipe by an air gap, and forms around the expansion pipe an annular chamber which is open at its upper end and closed at its lower end.

- 12 In its statement the claimant argues prior use against claim 1, stating that in 1998 when trading as Redring it looked at a water heater manufactured by Albion, and following some modifications began in April 1999 to sell it under model numbers CT25, CT50, CT75 and CT100 (“the models”). The claimant goes on to state that “A description of the Albion flatback water heater as sold by the claimant in 1999 is set out in Exhibit PR5 to the witness statement by Phil Rhodes” and argues that “From a comparison of claim 1 with the description of Albion flatback water heater in Exhibit PR5, it can be seen that the Albion flatback water heater has all the features set out in claim 1”.

Evidence of prior use against claim 1

- 13 Messrs Rhodes, Tanner and Murray of AEP gave evidence in the first round. Mr Rhodes’ exhibit PR5, referred to in the statement, shows a sheet of drawings (“the drawing”) dated 29 November 1994 and three sheets of photographs (“the photographs”) contained in a report dated 17 July 2003.
- 14 The drawing and photographs are from different sources. There are two drawings on a sheet pre-printed with the name of Albion and dated 29 November 1994, and five photographs contained in a report dated 17 July 2003 commissioned by Mr Murray.
- 15 Mr Rhodes states that the drawing is of a heater “produced and supplied by Albion”, and that the photographs show the Albion water heater as sold by AEP from April 1999 under the model numbers quoted above.
- 16 Mr Tanner confirms that an Albion water heater was sold under those model numbers in 1999 and 2000 and exhibits spreadsheets showing the numbers sold in those years. He gives no technical detail and makes no reference to either the drawing or the photographs.
- 17 Mr Murray also confirms that an Albion water heater was sold under those model numbers from April 1999. He exhibits a BEAB (British Electrotechnical Approvals Board) product approval certificate for the models dated 6 April 1999; a laboratory report prepared for the BEAB in 1999 by General Domestic Appliances; and a 1998 price list and a 2000 product directory which both refer to the models. He too makes no reference either to the drawing or to the photographs. The laboratory report he exhibits runs to 42 pages and includes three pages of photographs, but Mr Murray makes no reference to any particular passage or photograph in the report. Mr Murray also explains that he gave instructions to Mr Rhodes to take the photographs in response to a letter dated 16 May 2003 from Zip’s patent attorneys Keith W Nash & Co which drew the attention of AEP to the patent.
- 18 Mr Eggington of Albion also gave evidence for the claimant in the first round. He describes leading a design team which modified the design of the Albion heater in 1994 in order to achieve the standard required by the Water Research Council, which sets an upper limit for the temperature of the water in the upper reservoir. He states

that "... a co-axial pipe was positioned around the expansion pipe where it extended through the cold water reservoir to ... reduce heat transfer by conduction. The design was also modified by running the feed pipe from the cold water reservoir to the hot water tank outside of the hot water tank to remove the possibility of convection." He states that these modifications are shown in the drawing and that these modified heaters have been sold by Albion since 1994.

- 19 Mr Egginton also states that these modified heaters were sold to a company called Solectra, which was subsequently taken over by Zip. He goes on to state that he was lead contact with AEP when AEP adopted the Albion heater in 1998 for sale in 1999, and that the heaters supplied to AEP by Albion are as shown in the photographs.
- 20 Mr Vallis for the defendant highlights differences between the drawing and the photographs. He points out that the drawing shows a pipe in axial alignment with the expansion pipe but the photographs do not. He also points out that, whilst both the drawing and the photographs show a sleeve around the expansion pipe, in the drawing the sleeve stops at the base of the upper reservoir, but in the photographs the sleeve extends through the base of the upper reservoir to the top of the lower reservoir. He concludes that the drawing is purely illustrative and does not show an actual construction; and questions why there are no proper working drawings of the modified heater.
- 21 Mr Vallis describes purchasing a Redring water heater in early 2003 which included a co-axial sleeve around the expansion pipe, but notes that the instruction leaflet - which he assumes from a printer's code was published in 2001 - shows an expansion pipe without such a sleeve, and suggests that earlier versions produced did not have a sleeve. He also notes that the sleeve in the heater that he bought is of copper and is bonded to both tanks, and argues that this would provide a thermal bridge which would warm the water in the upper reservoir and not meet the standard required for approval by the Water Research Council. He suggests that failure to achieve approval would have meant that it would not have been worthwhile for AEP to have introduced the modifications shown in the photographs into its production models.
- 22 Mr Vallis recalls water heaters being supplied to Solectra by Albion but does not recall their incorporating the features referred to by Mr Egginton.
- 23 With its supplementary statement the claimant filed evidence from two more employees of Albion, Messrs Woollas and Whatton.
- 24 Mr Woollas describes modifications to Albion's "Slimline" water heaters being made in 1994 to achieve Water Research Council (now WRAS) approval as requested by another customer, Stiebel. He states that the modifications "included positioning a co-axial sleeve around the expansion pipe .. and running the cold water feed pipe externally of the lower tank...The modifications are shown schematically in the drawing." He states that WRAS approval was achieved for both the Slimline and the CT models, and exhibits certificates dated March 1995 and December 2005 for the Slimline range, and a certificate dated December 2005 for the CT range.
- 25 Mr Woollas goes on to say that "Mr Vallis is correct when he says that [the drawing] does not show the exact construction of the Albion heater as manufactured and sold

from 1995. [The drawing] was produced to show the proposed modifications and was not intended for use in manufacture. Indeed no manufacturing drawings of the modified Albion heater have been produced as the component parts are manufactured from patterns.”

- 26 Mr Woollas provides at exhibit SW5 a sketch (“the sketch”) “illustrating the layout of the expansion pipe and sleeve used in the Albion heater since 1995. .. the sleeve extends between the upper and lower tanks and is brazed to the upper surface of the lower tank and to the lower surface of the upper tank... [In] the Albion heater the cold water feed pipe is taken outside the lower tank and so does not support the upper tank in the same manner as the pipe in the Fig 1 construction [of the patent]. To compensate for this the sleeve is extended down to the lower tank and is brazed to the top of the lower tank and to the base of the upper tank where it passes through.”
- 27 Mr Whatton describes working on the manufacture of water heaters supplied by Albion to Stiebel and to AEP and confirms that they were modified as shown in the sketch in 1995 and 1999 respectively.
- 28 Mr Brown formerly of Stiebel also gave evidence in this round. He confirms that Albion modified the heaters supplied to his company in 1994 by introducing a sleeve around the expansion pipe and by placing the cold feed pipe outside and states that this product has remained on the market since then incorporating these two features.

Assessment of evidence relating to the drawing

- 29 There is no dispute that the drawing was made in November 1994 before the earliest priority date of the patent. What is in dispute is whether heaters were actually made and sold in accordance with the drawing. For the claimant, Mr Rhodes states that the drawing is of a heater produced and supplied by Albion and Mr Egginton states that heaters modified as shown in the drawing have been sold by Albion since 1994. Mr Vallis challenges this evidence, suggesting that the drawing is purely illustrative and does not show an actual construction. In response, Mr Woollas for the claimant states that Mr Vallis is correct and that the drawing was not intended for use in manufacture. Consistent with this he exhibits a sketch which illustrates the heaters that were actually made; and it is crystal clear that his sketch differs from the drawing in the same respects, identified by Mr Vallis, that the photographs differ from the drawing.
- 30 There is a conflict of evidence here on the part of the claimant’s own witnesses, with the challenge by Mr Vallis to the evidence of Messrs Rhodes and Egginton being supported by Mr Woollas. Messrs Tanner, Murray, Whatton and Brown make no reference to the drawing and I find their evidence of no assistance here. It seems to me clear in the circumstances that any doubt should be resolved in favour of the defendant; and I note in particular that the evidence of Mr Woollas which supports the view of Mr Vallis was in fact the claimant’s final word on the matter. On this basis therefore I find that the claimant has not discharged the onus placed on it to demonstrate prior use having regard to the drawing.
- 31 Prior publication in respect of the drawing has not been pleaded. However for completeness I note that there is no evidence to suggest that the drawing was in the public domain prior to the earliest priority date; indeed the drawing carries a printed

note warning against communication to third parties.

Assessment of evidence relating to the photographs and sketch

- 32 There is no dispute that the photographs were taken after the filing date of the patent. What is in dispute is whether heaters were actually made and sold in accordance with the photographs prior to the earliest priority date.
- 33 Mr Rhodes states that the photographs show the Albion water heater as sold by AEP from April 1999 under the quoted model numbers. The evidence of Messrs Tanner and Murray merely confirms that sales of the specified models were made from 1999, but does not make any connection between the models and the photographs. Mr Egginton confirms that the heaters supplied to AEP by Albion for sale in 1999 are as shown in the photographs. He also states that the modified heaters were sold to Solectra, subsequently taken over by Zip; a point which is denied by Mr Vallis. Mr Woollas and Mr Whatton both state that Albion has been supplying water heaters as shown in the sketch exhibited by Mr Woollas from 1995.
- 34 I find no assistance from the evidence of Messrs Tanner and Murray; and I approach the evidence of Mr Rhodes and Mr Egginton with some caution given that their evidence on the drawing was contradicted by Mr Woollas. However this time the evidence of Mr Rhodes and Mr Egginton is supported by that of both Mr Woollas and by Mr Whatton by reference to the sketch; and the evidence of Mr Brown is corroborative.
- 35 Regarding the points made by Mr Vallis: his argument on certification does not seem to me to be sustainable in the light of the evidence of Mr Woollas; that the instructions accompanying the water he purchased in 2003 did not show a sleeve is I think inconclusive; and his statement that the heaters supplied to Solectra by Albion did not incorporate the features referred to by Mr Egginton is not substantiated.
- 36 In the light of the above it seems to me that there is a body of consistent evidence from a number of individuals not employed by AEP - notably Mr Woollas and Mr Whatton both of Albion and Mr Brown of Stiebel - which is in the claimant's favour and which is not directly contradicted by any evidence from the defendant. Although I have found that there is no prior use in respect of the drawing, the drawing supports the submission that Albion were working on a sleeved arrangement from 1994. I conclude therefore that the claimant has made its case that a heater as shown in the photographs and in the sketch (hereafter "the Albion heater") was made available to the public from at least 1999, that is to say before the earliest priority date of the patent.
- 37 This heater appears to me to have all the features set out in claim 1 and I conclude that the invention claimed in that claim lacks novelty on the grounds of prior use.

Offer to amend

- 38 In its counterstatement, the defendant states that if prior use is found on the basis of the photographs, then it requests the opportunity to amend claim 1. To this end it proposes amended claims A, B, C and D and requests that they be considered in that order.

Claim A

39 Claim A reads as follows, amendments over claim 1 being underlined:

A water heater comprising upper and lower reservoirs in which cold water is stored in the upper reservoir for feeding the lower reservoir which contains water heating means, with an interconnecting passage for transferring cold water from the upper reservoir to the lower to maintain the level therein and an expansion pipe to permit heated water forced out of the lower reservoir by expansion to return to the upper reservoir, wherein the expansion pipe extends into and upwardly through the upper reservoir and means is provided to thermally separate the body of water in the upper reservoir from the expansion pipe extending upwardly through the upper reservoir, thereby to reduce the transfer of heat from the expansion pipe to the water in the upper reservoir, said means comprising a sleeve which surrounds the expansion pipe to at least the depth of the water in the upper reservoir and wherein the sleeve is spaced from the expansion pipe by an air gap, and forms around the expansion pipe an annular chamber which is open at its upper end and closed at its lower end, the annular spacing between expansion pipe and sleeve being selected so as to ensure that under normal conditions with the annular chamber filled with air, transfer of heat from the wall of the pipe to the wall of the sleeve is insufficient to cause any significant rise in temperature of the water in the upper reservoir which surrounds the sleeve.

40 Mr Woollas for the claimant notes that the patent does not provide any explicit guidance as to what the skilled person should regard as a “significant rise in temperature” but assumes that it means a rise which would take the temperature above the threshold set by WRAS and argues that since the Albion heater has obtained WRAS approval it necessarily meets the requirements of the claim. The defendant argues that the gap shown in the heater in the drawing is too small to limit heat transfer effectively, and draws a contrast with the wider gap in the heater shown in the patent, but it is the Albion heater shown in the photographs that must be considered here.

41 I agree with Mr Woollas’ analysis and find prior use against claim A. I should add that even in the absence of certification by WRAS I would reach the same conclusion; it seems to me that there would be no point in providing a sleeve specifically with the object of reducing heat transfer, as is done in the Albion heater, if that reduction were not significant *in context*.

Claim B

42 Claim B reads as follows, amendments over claim 1 being underlined:

A water heater comprising upper and lower reservoirs in which cold water is stored in the upper reservoir for feeding the lower reservoir which contains water heating means, with an interconnecting passage for transferring cold water from the upper reservoir to the lower to maintain the level therein and an expansion pipe to permit heated water forced out of the lower reservoir by expansion to return to the upper reservoir, wherein the expansion pipe extends into and upwardly through the upper reservoir and means is provided to thermally

separate the body of water in the upper reservoir from the expansion pipe extending upwardly through the upper reservoir, thereby to reduce the transfer of heat from the expansion pipe to the water in the upper reservoir, said means comprising a sleeve which extends from the base of the upper reservoir and surrounds the expansion pipe to at least the depth of the water in the upper reservoir and wherein the sleeve is spaced from the expansion pipe by an air gap, and forms around the expansion pipe an annular chamber which is open at its upper end and closed at its lower end.

- 43 Mr Woollas argues that the underlined passage does not exclude an arrangement in which the sleeve also extends downwardly from the base of the upper reservoir, as well as upwardly, and concludes that Claim B can be read onto the Albion heater. Mr Vallis himself states that “ I never intended my design to be limited to the arrangement shown in Fig 1 of the patent .. (where the sleeve does not extend below the base of the upper reservoir) but that is quite different from the arrangement such as shown in the photographs ... where the sleeve ... extends to ... the top of the hot water reservoir”.
- 44 The key point it seems to me is that claim B is completely silent as to what happens to the sleeve below the upper reservoir. In consequence I agree with Mr Woollas that the Albion heater reads onto claim B and I conclude that the claim lacks novelty on the grounds of prior use.

Claim C

- 45 Claim C reads as follows, amendments over claim 1 being underlined:

A water heater comprising upper and lower reservoirs in which cold water is stored in the upper reservoir for feeding the lower reservoir which contains water heating means, with an interconnecting passage for transferring cold water from the upper reservoir to the lower to maintain the level therein and an expansion pipe to permit heated water forced out of the lower reservoir by expansion to return to the upper reservoir, wherein the expansion pipe extends into and upwardly through the upper reservoir and means is provided to thermally separate the body of water in the upper reservoir from the expansion pipe extending upwardly through the upper reservoir, thereby to reduce the transfer of heat from the expansion pipe to the water in the upper reservoir, said means comprising a sleeve which extends from the base of the upper reservoir and surrounds the expansion pipe to at least the depth of the water in the upper reservoir and wherein the sleeve is spaced from the expansion pipe by an air gap, and forms around the expansion pipe an annular chamber which is open at its upper end and closed at its lower end by the base of the upper reservoir.

- 46 Mr Woollas acknowledges that what is claimed here differs from the Albion heater, but states that it is the same as that shown in the drawing which “seems to be the simplest and therefore the most obvious method of positioning the sleeve”.
- 47 Regarding inventive step, Mr Woollas goes on to argue that the sleeve arrangement used in the Albion heater and that shown in Figure 1 of the patent are obvious alternatives, each having advantages and disadvantages, and that it is nothing more than an exercise of normal engineering skills to consider both options and to determine

which is the most suitable for any particular water heater design. He concludes that it would have been obvious prior to July 2000 for any competent engineer with experience in the design and manufacture of water heaters to realise that the co-axial sleeve used in the Albion heater could be modified as shown in Figure 1 of the patent.

- 48 I conclude firstly that claim C is novel since as acknowledged by Mr Woollas it is distinguished from the Albion heater.
- 49 Regarding inventive step, I find difficult to be persuaded by Mr Woollas' argument that the drawings show the "most obvious" method of positioning the sleeve, given that this was not the form in which the heater was actually manufactured for sale. In any case the assessment of inventiveness has to be made against what was sold and the evolution of this has been described above. In order to meet WRAS requirements the sleeve was introduced and the cold water feed pipe was run externally of the lower reservoir; the sleeve being extended downwards and brazed to the to the lower surface of the upper reservoir and to the lower surface of the upper reservoir to compensate for the fact that the re-routed cold water pipe no longer supports the upper reservoir.
- 50 Taking the sleeve right down to the upper surface of the lower reservoir and brazing it there in order to provide structural rigidity also closes the lower end of the sleeve. It seems to me that this development points away from the step of closing the lower of the sleeve by means of the base of the upper reservoir - as required by claim C - and in consequence would not have been an obvious step for the skilled man to take.
- 51 I conclude therefore that claim C is new and involves an inventive step.

Claim D

- 52 Claim D reads as follows, amendments over claim 1 being underlined:

A water heater comprising upper and lower reservoirs in which cold water is stored in the upper reservoir for feeding the lower reservoir which contains water heating means, with an interconnecting passage for transferring cold water from the upper reservoir to the lower to maintain the level therein and an expansion pipe to permit heated water forced out of the lower reservoir by expansion to return to the upper reservoir, wherein the expansion pipe extends into and upwardly through the upper reservoir and means is provided to thermally separate the body of water in the upper reservoir from the expansion pipe extending upwardly through the upper reservoir, thereby to reduce the transfer of heat from the expansion pipe to the water in the upper reservoir, said means comprising a sleeve which extends from the base of the upper reservoir and surrounds the expansion pipe to at least the depth of the water in the upper reservoir and wherein the sleeve is spaced from the expansion pipe by an air gap, and forms around the expansion pipe an annular chamber which is open at its upper end and closed at its lower end, the annular spacing between expansion pipe and sleeve being selected so as to ensure that under normal conditions with the annular chamber filled with air, transfer of heat from the wall of the pipe to the wall of the sleeve is insufficient to cause any significant rise in temperature of the water in the upper reservoir which surrounds the sleeve and wherein the annular chamber is closed at its lower end by the base of the upper reservoir.

53 Claim D includes the additional features of claims A, B and C. Having found that claim C is allowable, there is no need for me to consider claim D. However for completeness I conclude, having regard to my findings above, that claim D is new and involves an inventive step.

Claims appendant to claim 1

54 The defendant requests that if claim 1 of the patent falls, claims 2 to 6, 8, 10 and 12 be amended by incorporating into those claims the features of claim 1.

55 These claims read as follows:

2 A water heater as claimed in claim 1 wherein the sleeve is formed from thermally insulating material.

3 A water heater as claimed in claim 1 or 2 wherein a drain is provided for draining any water which collects in the annular chamber around the expansion pipe.

4 A water heater as claimed in any of claims 1 to 3 wherein the expansion pipe at least where it extends into the upper reservoir is formed from a material having low thermal conductivity relative to that of copper.

5 A water heater as claimed in claim 1 wherein the expansion pipe is formed from metal and the sleeve is cylindrical and is also formed from metal and has an internal diameter which is substantially greater than the outside diameter of the expansion pipe and extends from the base of the upper reservoir to a height therein which is greater than the depth of water in the upper reservoir, the sleeve and the pipe being coaxially arranged so that the sleeve is spaced from the pipe by the same distance around the whole of its circumference, and the spacing is selected so as to ensure that under normal conditions, with the annular space between the pipe and the sleeve filled with air, the transfer of heat from the wall of the pipe to the wall of the sleeve is insufficient to cause any significant rise in temperature of the water in the upper reservoir which surrounds the sleeve.

6 A water heater as claimed in claim 5 wherein a collar of a material having a low thermal conductivity relative to that of copper surrounds the expansion pipe where it extends through a wall of the upper reservoir, to separate the pipe from the wall.

8 A water heater as claimed in any of the preceding claims wherein the upper end of the expansion pipe is bent over to form an inverted U-bend, or is otherwise extended, so that if water is forced up the expansion pipe, due to excess temperature in the lower reservoir, it will be discharged in a generally downward direction, clear of the sleeve.

10 A water heater as claimed in any of claims 1 to 9 wherein the level of cold water in the upper reservoir is maintained at a predetermined level by water level responsive valve means which permits the inflow of cold water into the upper

reservoir only if the level of water therein is below the said predetermined level.

12 A water heater as claimed in any of claims 1 to 11 further comprising temperature sensing means for sensing the temperature of the water in the upper reservoir and adapted to produce a response if the temperature of the water therein rises above a predetermined level.

56 The claimant attacks claims 5, 8 and 10 for lack of novelty, claims 2, 3, 4, 6 and 12 for lack of inventive step, and in addition submits that the specification does not disclose the invention of claim 5 clearly and completely enough for it to be performed by a skilled person.

Claims 5, 8 and 10

Claim 5

57 Claim 5 requires that “the transfer of heat from the wall of the pipe to the wall of the sleeve is insufficient to cause any significant rise in temperature of the water in the upper reservoir which surrounds the sleeve”. I have already concluded when considering claim A that this feature does not distinguish from the Albion heater.

58 Claim 5 also requires that the pipe and sleeve to be of metal and “that the sleeve is spaced from the pipe by the same distance around the whole of its circumference”. Regarding the first of these features, a metal pipe and sleeve are features of the Albion heater as described by Mr Rhodes and Mr Woollas. Regarding the second, a close inspection of the photographs indicates that whereas the sleeve is of circular cross-section, the pipe, ie the expansion pipe, looks to be more elliptical in shape. This is not a point that has been raised by the defendant. In any case to my mind on a purposive construction of the claim, the point is not of significance and does not alter my conclusion that the claim lacks novelty. If I am wrong on the issue of shape, then it seems to me that the claim would still fall as lacking inventive step.

59 Objection has also been taken that the specification does not enable a skilled person to perform the invention of claim 5 on the grounds that there is no guidance as to spacing required between the sleeve and the pipe, nor as to what constitutes a “significant” rise in temperature. It seems to me that this attack fails for the same reason that the novelty attack succeeds, namely that the skilled man would understand what is meant by “significant” in context and would be readily able to set a spacing accordingly.

Claim 8

60 I find that the feature introduced by claim 8 is unambiguously shown in the photographs and that the claim therefore lacks novelty on the grounds of prior use.

Claim 10

61 Here the claimant argues that the photographs in exhibit PR5 show “a float valve 20”, which meets the requirements of claim 10. On inspection, however it is clear that reference numeral 20 indicates the expansion pipe, and indeed the description in PR5 states that “Although not shown in the drawings, a conventional float valve ..”

62 That said, the 1998 Evaluation Report exhibited by Mr Rhodes specifically describes the use of a ball-cock to control the water level in the upper tank. This report is marked “company confidential” but I take it, along with the description but not the illustrations in PR5, as evidence of the construction of the Albion heater as manufactured and sold. I conclude therefore that the claim lacks novelty. I would add that in the absence of this evidence it seems to me that the claim could not in any case conceivably involve an inventive step, being met by the common or garden ball-cock.

Claims 2, 3, 4, 6 and 12

63 These claims have been attacked for lack of inventive step, however the defendant argues that the claimant has filed no evidence in support of its attacks. This is indeed the case; in general the claimant simply asserts that what is claimed are design modifications that would be obvious to a person skilled in the art. It seems to me that the approach that I should adopt is to look at each claim on its merits, bearing in mind that it is an established principle that it is right for a hearing officer to use his own knowledge and experience, but that I should be careful to exercise that discretion with caution.

Claim 2

64 Claim 2 requires the sleeve to be formed from thermally insulating material. In the construction shown in the photographs the sleeve is made of copper so there is no issue of novelty, but the claimant argues that it would have been obvious to use insulating materials in view of the intended purpose of the sleeve. The claimant also refers to a 1998 Evaluation Report exhibited by Mr Rhodes which describes the sleeve and the external cold water pipe and comments that "These .. features, presumably together with good insulation, allow the product to be WRc [ie WRAS] approved." The claimant takes this comment to mean that the engineer who evaluated the product considered the use of thermally insulating materials to be an obvious consideration in view of the intended purpose of the sleeve.

65 Mr Vallis responds that the sleeve in the Albion water heater is made of copper, and that there is no suggestion of using alternative materials in the Evaluation Report or in any of the other evidence.

66 Mr Woollas supports the argument that it would have been obvious to consider the use of insulating material. He goes on to state that “I would have expected any competent engineer in the design and manufacture of water heaters to have an understanding of the thermal properties of a variety of materials and to consider using a thermally insulating material for the sleeve as a means of further reducing heat transfer from the expansion pipe to the water in the upper tank. Accordingly, I would not regard this feature as being anything other than an obvious modification. However, in common with most heaters of this type, the tanks of the Albion heater are made of copper. In view of this and for ease of manufacture, the sleeve in the Albion heater is also made from copper pipe which can be brazed to the tanks. Since a copper sleeve provides satisfactory results, it was not necessary to use a sleeve made from insulating material”.

67 Mr Woollas also states that “.. because the tanks in a cistern type heater are typically manufactured from copper, there would be practical difficulties in manufacturing a heater with plastic pipes or with plastics sleeves about the pipes and it is unlikely that such arrangements would be cost effective to produce as mechanical joints would be necessary. In addition the different rates of expansion could lead to leaking joints”.

68 I agree with Mr Vallis that there is nothing in any of the evidence, including the Evaluation Report, to suggest using insulating material for the sleeve. Moreover the submissions by Mr Woollas quoted above seem to me in fact to point the skilled man away from trying such materials, given the statement that (i) a copper sleeve works perfectly well in terms of containing heat transfer, (ii) the use of copper facilitates manufacture and (iii) the use of plastics pipes and sleeves might lead to leaks .

69 On balance therefore I am not persuaded that it would have been an obvious step for the skilled man to take in the circumstances, and I conclude that claim 2 is inventive.

Claim 3

70 The claimant has attacked this claim, which relates to providing a drain for any water collecting in the annular chamber around the expansion pipe, as lacking inventive step. Although no evidence has been filed in support of this attack, it seems to me that the step of providing a drain in a water trap, ie an area where water may undesirably collect, is a wholly conventional option. Here, it seems to me, the patent tells the skilled man nothing which he did not know before, and what is set out in the claim would be an obvious step for him to take and require no degree of invention. I conclude that the claim does not introduce an inventive step.

Claim 4

71 This claim has also been attacked as lacking inventive step; again without supporting evidence. Claim 4 introduces the feature that the expansion pipe at least where it extends into the upper reservoir is formed from a material “having low thermal conductivity relative to that of copper”. Since copper has a relatively high thermal conductivity it seems to me that this claim embraces such a wide range of materials, conductive as well as insulating, that it will necessarily include materials whose use in this particular application cannot be regarded as inventive. I distinguish this from the argument I apply above to claim 2, which is also directed to the materials used, but where the claim is significantly more narrowly drawn. I conclude that claim 4 does not introduce an inventive step.

Claim 6

72 This claim has also been attacked as lacking inventive step; again without supporting evidence. Claim 6 introduces the feature that a collar of a material having a low thermal conductivity surrounds the expansion pipe where it extends through a wall of the upper reservoir.

73 It seems to me that the evidence of Mr Woollas quoted above in the context of claim 2, if anything points the skilled man away from trying the feature of claim 6. In any case, it is my view that this attack requires evidence to substantiate it, and in the absence of

such evidence I am not persuaded that it would be right to find against the claim.

Claim 12

74 Claim 12 introduces the feature of sensing the water temperature in the upper tank and producing a response if it exceeds a set level. As pointed out by the claimant, the use of sensors to monitor water temperature was well known before the earliest priority date of the patent. I agree. However I note that the water in the upper tank is not being directly heated ie the arrangement claimed is not the conventional one in which a tank of water is heated up to a desired pre-set level; instead the temperature is sensed in order to monitor undesired heating. That said, once it has been established that in order to meet WRAS requirements, the water in the upper tank should not exceed a certain temperature, it seems to me that to sense when the temperature reached that level would have been an obvious step for the skilled man to take in the circumstances, and I conclude that claim 12 is not inventive.

Conclusions

75 I have found that claim 1 is not new. Of those appendant claims nominated by the defendant for consideration in the event that claim 1 falls, I have found that claims 5, 8 and 10 are not new and that claims 3, 4 and 12 do not involve an inventive step. Of claims A to D proposed by way of amendment, I have found that claims A and B are not new. I have however found against the claimant in its submission that the specification does not disclose the invention of claim 5 clearly and completely enough for it to be performed by a skilled person.

76 I have also found that claim C, and claim 1 of the patent amended to incorporate the features of either claim 2 or claim 6, are new and inventive.

Next steps

77 I allow the defendant six weeks to file amendments to the claims in line with my conclusions, and consequential amendments where necessary. If it fails to do so I shall revoke the patent.

78 The defendant has requested a certificate of contested validity under section 65 in respect of claims remaining in the patent. I defer action here pending satisfactory amendment to the claims.

Costs

79 The claimant has won and so is in principle entitled to costs. The defendant has submitted that the fact that the claimant did not communicate with the defendant prior to filing its application for revocation should be taken into account when determining any order for costs. However since the defendant has resisted all the grounds raised, the evidence rounds have been carried through in full, and there is no evidence that any attempt has been made by the defendant to settle the dispute outside this action, I am not persuaded that this is a relevant factor.

80 Based on the published Patent Office scale then, I award AEP the sum of £1900 to be

paid by Zip not later than 7 days after the expiry of the appeal period. If an appeal is lodged, payment will be automatically suspended pending the outcome of the appeal.

Appeal

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

DAVID BARFORD

Deputy Director acting for the Comptroller