

PATENTS ACT 1977

IN THE MATTER OF Patent Number EP (UK) 0071308 in the name of Whirlpool Europe BV and an application for revocation under section 72 (1)(a) by BSH Bosch and Siemens Hausgeräte GmbH

DECISION

Introduction

- 1 European patent (UK) number 0071308 was granted to Philips Electronic and Associated Industries Limited in 1986. The current proprietor is Whirlpool Europe BV (“Whirlpool”). On 30 December 1999 BSH Bosch and Siemens Hausgeräte GmbH (“BSH”) applied to the Comptroller for revocation of the patent under section 72(1)(a) of the Patents Act 1977, on the grounds that the invention was not new within the meaning of section 2 of the Act, and that it did not involve an inventive step within the meaning of section 3 of the Act. A counter-statement was filed on 20 March 2000 by Whirlpool. The usual rounds of evidence followed and the case came before me at a hearing on 12 January 2001 where BSH were represented by Mr James Mellor and Whirlpool were represented by Mr Thomas Mitcheson.
- 2 I note in passing that the patent has also been litigated in Italy, and indeed the evidence in the present case includes an opinion written by a technical expert appointed by the Italian court to assist it in determining validity and infringement. Mr Mitcheson also told me that a parallel action is taking place in Germany, and is due to be heard on 15 February 2001. Whirlpool are anxious for my decision to be issued before then.

The concept of the invention

- 3 The invention concerns the detection of imbalance in a washing machine drum before it is accelerated to spin speed, in order to eliminate damaging vibration of the drum during the spin cycle. It relates to washing machines having a tachogenerator which produces a signal representative of drum speed, and a speed control loop which makes use of the tachogenerator output. The drum is slowly accelerated before spinning so as to distribute the clothes evenly. This slow acceleration is known as a “distribute ramp”. The drum is then held for a while at an intermediate speed between the washing speed and the spinning speed, at which the clothes cling to the drum by centrifugal force. If the load is unbalanced, the speed will not be constant whilst the drum is being held at its nominal intermediate speed but will fluctuate cyclically, and this is used to detect unbalance.
- 4 This corresponds broadly to what is claimed in the independent claim 1, which reads as follows:

1. A motor speed control arrangement for a washing machine of the type having a laundry drum which is rotatable about a substantially horizontal axis by an electric motor which is provided with a tachogenerator having an a.c. output signal which is proportional to the speed of the motor and, hence, of the drum; the arrangement being arranged for connection to said motor and tachogenerator to form a speed control loop whereby the motor speed may be automatically brought to a wash speed at which the laundry articles may be washed and then to a higher (spin) speed at which the articles may be at least partially spin-dried, the control arrangement being provided with means for causing the motor to drive the drum relatively slowly through an intermediate distribute speed range to enable the articles to be distributed evenly around the drum to a given speed at which the articles become retained in a substantially fixed position relative to the drum by centrifugal force before the control arrangement causes the motor speed to increase to the required spin speed, characterised in that the arrangement includes means for maintaining said given speed for a given period, for monitoring the actual motor speed, as represented by the tachogenerator output signal, during this period and for giving an output signal if the tachogenerator output reveals that the motor speed changes during this period by more than a predetermined amount, which change in speed is indicative of an unbalanced distribution of the laundry articles around the drum.

5 Claim 1 does not specify what occurs if an imbalance condition is detected. Claim 5 is an independent method claim corresponding in all but a few insignificant respects to claim 1 but with the further requirement that if imbalance is detected the motor is prevented from moving on to spin speed. It reads as follows:

5. A method of controlling the motor speed of a washing machine of the type having a laundry drum which is rotatable about a substantially horizontal axis by said motor which is provided with a tachogenerator having an output signal which is proportional to the speed of the motor and, hence, of the drum, a speed control arrangement being connected to said motor and tachogenerator to form a speed control loop whereby the motor speed may be automatically brought to a wash speed at which the laundry articles in the drum may be washed and then to a higher (spin) speed at which the articles may be at least partially spin-dried, the method including the steps of driving the motor relatively slowly from the wash speed through an intermediate distribute speed range to enable the articles to be distributed relatively evenly around the drum to a given speed at which the articles have become retained in a substantially fixed position relative to the drum by centrifugal force and subsequently increasing the motor speed to the spin speed, characterised in that the method further includes the steps of maintaining the motor speed at said given speed for a given period, monitoring the motor speed, as represented by the tachogenerator output signal, during this period, detecting whether the tachogenerator output reveals that the motor speed changes during this period by a given amount representative of unevenly distributed articles round the drum, and preventing the motor from increasing its speed to the spin speed if such a motor speed change is detected.

6 There are two other outcomes to a detection of imbalance which are specified in the subsidiary claims. One is that the speed is reduced back down to the wash speed or a speed lower than wash speed, followed by a repetition of the distribute ramp and imbalance detection. This corresponds to claim 2. Alternatively, the speed can be

reduced to a complete stop, followed again by repetition of the distribute ramp and imbalance detection, which corresponds to claim 3. Claim 6 is a method claim which is similar in scope to claim 3. The only remaining subsidiary claim, claim 4 specifies that the “predetermined amount” of speed change required to detect imbalance is more than 5%.

- 7 Before moving on, it is worth noting that the patentee acknowledges in the specification that it is known to provide a distribute ramp, and cites GB1266691 as an example of a prior specification in which such a distribute ramp is described.

The key issues

- 8 Revocation is sought on the grounds that the patent lacks novelty in the light of prior patent specification DE2620464 (“Philips”), or failing that, does not involve an inventive step in the light of Philips and four other patent specifications: DE2033856 (“Siemens”), GB1266691 (“BDA Eastall”), GB1353906 (“BDA Baigent”) and GB1528800 (“Thomson”). BDA Eastall is actually acknowledged in the present specification.
- 9 The key prior art disclosure is Philips. BSH have provided a certified translation of this specification (and also of Siemens) on which the arguments have been based. Philips is concerned with the same problem as the present patent, that of avoiding instability in the drum caused by uneven distribution of the laundry articles while the machine is spinning. In its introduction, Philips refers to the BDA Eastall patent, points out that it (a) doesn’t detect imbalance until the spin speed has been reached and (b) does so using an electromechanical switch, and then discusses the disadvantages of these two features. By way of improvement over the BDA Eastall arrangement, the invention in Philips is the idea of checking for imbalance at the intermediate speed, using a “measurement of a characteristic of the drum and/or motor, which characteristic changes with time”.
- 10 Of the other citations, Siemens demonstrates that it was known at the priority date to use a tachogenerator for washing machine drum speed control. BDA Baigent is a development of BDA Eastall referred to above, and envisages returning the drum speed right down to a stop after the detection of imbalance rather than merely to a slow speed as in BDA Eastall. The disclosure in Thomson is once again of a distribute ramp.
- 11 In its evidence the applicant also cites an extract from conference proceedings, entitled “Electronic Motor Speed Control in Automatic Washing Machines” by T Jacobs (“Jacobs”). This article discusses a wide range of issues including use and control of induction motors, d.c. motors, permanent magnet motors and series motors in washing machines. It covers feedback control of speed (of a series motor) using a tachometer generator (another name for a tachogenerator) to provide a measured speed signal, and continues with a discussion of interference, suppression and safety in washing machine control systems.

The law

- 12 Section 72(1)(a) of the Patents Act 1977 provides that the comptroller may on the

application of any person revoke a patent on the ground that the invention is not a patentable invention. Section 1(1) of the Act sets out what a patentable invention involves: it must satisfy the conditions that a) it must be new, b) it must involve an inventive step, c) it must be capable of industrial application and d) it must not fall within any of the excluded categories referred to in the remainder of section 1. BSH say that the present patent does not comply with condition a) or b) of this subsection in that it is not new within the meaning of section 2 of the Act, which contains the familiar provisions on novelty in the light of the prior art. They also say that it does involve an inventive step within the meaning of section 3 of the Act, which contains the provisions relevant to inventive step.

- 13 Mr Mellor took me to the test for novelty enunciated by Sachs L.J. in *General Tire and Rubber Company v Firestone Tyre and Rubber Company Limited* [1972] RPC 457 at 485 where he said:

“If the prior inventor’s publication contains a clear description of, or clear instructions to do or make, something that would infringe the patentee’s claim if carried out after the grant of the patentee’s patent, the patentee’s claim will have been shown to lack the necessary novelty, that is to say, it will have been anticipated.”

Later Sachs L.J. goes on to say:

“If, on the other hand, the prior publication contains a direction which is capable of being carried out in a manner which would infringe the patentee’s claim, but would be at least as likely to be carried out in a way which would not do so, the patentee’s claim will not have been anticipated, although it may fail on the ground of obviousness. To anticipate the patentee’s claim the prior publication must contain clear and unmistakable directions to do what the patentee claims to have invented.”

- 14 The *Windsurfer* case, *Windsurfing International v Tabur Marine* [1985] RPC 59 provides a well-established approach for determining whether an invention involves an inventive step and was accepted by both sides at the hearing. Oliver L.J. sets out the approach at page 73:

“There are, we think, four steps which require to be taken in answering the jury question. The first is to identify the inventive concept embodied in the patent in suit. Thereafter, the court has to assume the mantle of the normally skilled but unimaginative addressee in the art at the priority date and to impute to him what was, at that date, common general knowledge in the art in question. The third step is to identify what, if any, differences exist between the matter cited as being “known or used” and the alleged invention. Finally, the court has to ask itself 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.”

- 15 The purpose of this structured approach is for the court to put itself in the position of a person skilled in the art at the priority date of the invention. It recognises that it is an essential discipline in making a proper determination of inventive step to avoid using hindsight. This point was brought out more recently by Aldous L.J. in *Beloit*

Technologies v Valmet Paper Machinery Inc [1997] RPC 489 to which Mr Mitcheson took me. At page 494 referring to the court's duty to find as a matter of fact whether the alleged inventive step would be obvious to a person skilled in the art, Aldous L.J. says:

“That question of fact is a jury type question which inevitably requires the court and usually the witnesses to look back with knowledge of the invention. Such an advantage was not available to the inventor and therefore, when deciding the jury type question, the court must be careful not to be wise after the event. The court must put on ‘the spectacles’ of the notional skilled addressee at the priority date of the patent and, using such contemporary evidence as there may be, make sure that any conclusion reached is not the result of hindsight.”

- 16 In putting on those spectacles, however, it is permissible for the court to consider the opinion of experts. Mr Mitcheson again took me to an authority on this point. *Mölnlycke AB and another v Proctor & Gamble Limited and others (No 5)* [1994] RPC 49. This decision considers the same issue of the finding of fact as to obviousness of an alleged inventive step and says at page 113:

“In applying the statutory criterion and making these findings the court will almost invariably require the assistance of expert evidence. The primary evidence will be that of properly qualified expert witnesses who will say whether or not in their opinions the relevant step would have been obvious to a skilled man having regard to the state of the art. All other evidence is secondary to that primary evidence.”

- 17 Both sides have filed evidence from technical witnesses, and there is argument from both of them as to whether the witnesses on either side are properly qualified expert witnesses in the sense of the *Mölnlycke* decision. I will come to that below, but there is another point which is not always recognised by parties putting forward such evidence, which is that an expert witness has a strict duty to approach his analysis from an entirely independent viewpoint unfettered by the fact that he or she has been retained by one of the parties to the dispute. The responsibilities of an expert witness were summarised in the *Ikarian Reefer* case [1993] FSR 563, which makes clear that their evidence should be “the independent product of the expert uninfluenced as to form or content by the exigencies of the litigation.” and should provide “independent assistance to the court by way of objective, unbiassed opinion in relation to matters within his expertise”. Indeed, these responsibilities are now set out expressly in rule 35.3 of the Civil Procedure Rules 1998. Failure to adhere to this strict responsibility will seriously undermine the weight that can be given to an expert witness's opinion.

- 18 Finally, while expert witnesses may assist me with the meanings of technical terms or phrases, it is of course for me to construe the documents presented in the case.

The witnesses

- 19 Two witnesses for BSH provided evidence in the form of statutory declarations and two for Whirlpool provided witness statements. Each was presented as expert evidence, and their evidence relates in large part to an assessment of the teaching of the Philips

specification. Both counsel argued at the hearing that the other side's witnesses were not competent to assist me. There was no cross examination, so I will have to assess their competence to act as expert witnesses in the present case and the weight I can give to their opinions from what they have written and their qualifications.

20 In order to interpret Philips for novelty, I need to know what the addressee of that specification would have understood by it in order to decide whether it provides clear and unmistakable directions to do what Whirlpool claim. To assess it in respect of obviousness, I also need to consider what it taught the notional "skilled addressee" referred to in *Windsurfer*, at the priority date of the present patent. The addressee is essentially the same in both cases, and it is my view that that person would be an electrical engineer involved in the design of washing machine control circuits. Mr Mitcheson's suggestion that the skilled addressee would be a "designer of washing machines" is probably a little too broad in that I see no need for the addressee to have knowledge of all aspects of washing machine design, but nothing really turns on that.

21 I will now consider the witnesses in turn. The applicant's first witness is Mr Ralf Ruchay, a patent attorney who has worked as such for BSH for 26 years. Whilst he may well have long experience of washing machine control circuits, he is a patent attorney, not a designer of washing machine control circuits. Thus he is looking at things through the eyes of a lawyer, and I agree with Mr Mitcheson that the skilled addressee is not a lawyer but the person with hands on experience. Mr Ruchay's legal focus is apparent in his evidence, which is mainly concerned with telling me how to interpret the Philips and Whirlpool specifications, not with providing the sort of information I would look for from a technical expert. Also, because he is employed by the applicant, Mr Ruchay is not credible as an impartial expert and does not come across as one. Consequently, I have found Mr Ruchay's evidence of very little assistance.

22 The proprietor's first witness is Dr John Williamson, an electrical engineer who has many qualifications. He has experience over many years in a wide range of electrical engineering fields, but he has no experience whatsoever in the washing machine field. Mr Mitcheson said that this did not matter, but I do not think this lack of relevant experience can be brushed aside. I do not consider I can give a lot of weight to someone who cannot speak from personal experience of the issues faced by the notional skilled addressee. More importantly, Dr Williamson's extensive experience as an expert witness in intellectual property cases shows in his evidence and has, in my view, reduced his credibility in that he subjects the wording of the specifications to the same sort of detailed and, dare I say, nit picking, analysis that one expects of some patent attorneys, and so does not give me the impression that he is looking at them from the same perspective as the skilled person.

23 In addition, many of his comments are totally unconvincing and demonstrate a desire to argue Whirlpool's case rather than present the unbiased view of an expert. For example in paragraph 5.5 of his witness statement he states:

"... the 'characteristic which changes with time' used in Philips to monitor the imbalance is, as the specification makes clear, the current drawn by the motor. As stated at page 3, line 2, this is the preferred time-dependent characteristic taught by the specification: indeed there is no teaching that any other characteristic could or

should be used”

In fact there is a clear statement that other characteristics could be used. Page 7 of the translation states “Further, the electrical characteristic of the regulated motor can be a (sic) different insofar as this characteristic is variable in the same mode and manner” and there are frequent generalising statements in the claims and description that what is required is “a characteristic which changes with time of the drum and/or motor”, clearly envisaging characteristics other than motor current. In short, Dr Williamson’s analysis tended to obscure rather than illuminate the issues and I found his opinion to be of little help.

- 24 The proprietor’s second witness statement comes from Alessandro Guerci a patent agent for Whirlpool in Italy, though in truth this is no more than a vehicle for introducing an opinion of a Mr Giorgio Lotti given in an action concerning the patent in suit, EP0071308, in the Court of Turin. This action dealt with its validity in the light of the Italian equivalent, IT1038355, of the Philips patent cited in the present case. Mr Lotti was appointed as Official Technical Consultant by the President of the Court and charged with reporting on the “requirements for validity” in EP0071308 having physically examined two BSH washing machines, and also to give his opinion concerning possible infringement of the claims. Mr Lotti says (on page 13 of the translation of his opinion) that his function is to assess facts, documents and technical tests and to observe the objective information in order to express his own opinion.
- 25 No qualifications have been given for Mr Lotti, so I do not know whether he is our skilled person. Moreover, whilst in the part of his report concerned with validity of the EP patent, he concludes it is valid, he does not address all the arguments that have been put to me, presumably because those arguments were not made in the Italian proceedings. In particular, Mr Lotti does not address the broadening wording in claim 1 and elsewhere of DE2620464 relating to the measurement of a time-varying characteristic of the drum and/or motor. Indeed, his arguments on obviousness are very sketchy and the reasons for his conclusions not clear. Thus even accepting the desirability of consistency across Europe, Mr Lotti’s opinion can have only limited persuasive value so far as the present proceedings are concerned. Further, even if the Italian court came to the same conclusion as proposed in Mr Lotti’s opinion, I have no evidence that they accepted his arguments in arriving at it, so I cannot automatically assume, as Mr Mitcheson suggested, that he must be a “good” witness for the purposes of the present proceedings. Once again, I can place very little weight on this evidence.
- 26 Finally, the applicants’ second witness is Mr Peter Blauert. Mr Blauert is a washing machine control circuit engineer, so *prima facie* he fits the requirements for the skilled addressee. His assessment is less legalistic and hence more plausible as an expert than Ruchay’s or Williamson’s. However, his expertise is much more recent than the priority date of the patent; he had not even started university at the relevant time, and has presumably spent his entire career in an era where the arrangements described in the Whirlpool and Philips patents are commonplace in washing machine control. I do not therefore consider that he is well placed to say how documents would have been interpreted at the priority date of the patent. Mr Mellor’s assertion that the field has not changed significantly in that time is not supported by any evidence and indeed seems to be flatly contradicted by the very developments being considered in the present action. Moreover because Mr Blauert, like Mr Ruchay, is employed by the claimant, he does not

make a credible impartial witness anyway. I therefore agree with Mr Mitcheson that I can attach little weight to Mr Blauert's evidence.

- 27 In short, none of the evidence provided by these witnesses is of much help to me in reaching my decision. I will therefore have to rely largely on my own assessment of the prior art in the light of the arguments advanced.

What does Philips teach the skilled person?

- 28 Before moving on to consider the substantive points of novelty and obviousness, I must assess what the Philips specification teaches the skilled person reading it without a knowledge of Whirlpool, in accordance with the approach approved in *Windsurfer*. I am satisfied that the key teaching in Philips is that imbalance is detected at an intermediate speed at which the laundry articles have been distributed round the drum. This is emphasised by the last paragraph on page 2 of the translation which states:

“The most important advantage obtained on application of the described method is that the spinning operation takes place only after the laundry in the drum has a distribution which does not increase the imbalance of the tub”.

Philips also teaches that by detecting the imbalance at this stage it is possible to detect it very accurately, simply and cheaply by monitoring a time-varying characteristic of the drum and/or the motor. The description further indicates that this monitoring can be accomplished by supplementing the motor control mechanisms which already exist, as Philips puts it: ‘in the so-called “black box” of the appliance together with the motor regulating module’.

- 29 I must, though, disagree with Mr Mitcheson's view that the specification teaches only the use of motor current as the characteristic to be measured. I accept that it strongly advocates the use of motor current, and that is the parameter which is monitored in the single embodiment described. However, as I noted above in relation to Dr Williamson's evidence, there are repeated more-general references to the measurement of a time dependent characteristic of the drum and/or the motor, and as a result, the skilled person is not led down the mental tram lines of thinking that motor current is the only thing that can be monitored. The possibility of considering other characteristics is clearly planted in his or her mind. This is reinforced by the whole way the invention is introduced in the specification on pages 2 and 3 of the translation. Having talked about the objects of the invention, the “method according to the invention” is summarised with no reference to monitoring the current. The specification then goes on to say that the most important advantage of the invention is that imbalance is detected before the spinning operation - ie when imbalance is detected, not how - before saying that a further advantage is that the checking is done by using a time-dependent characteristic. It is then and only then that it refers to current, and only as a preferred feature, not as an essential feature.

- 30 There is also a generalising paragraph at the end of the description on page 7 of the translation, which envisages variations in the arrangement described in the embodiment. It proposes the use of different electrical characteristics of the motor than current, “insofar as this characteristic is variable in the same mode and manner.” Claim 1 also encompasses

arrangements other than those which use motor current to detect imbalance. It says:

“... characterised in that the monitoring of the imbalance of the tub takes place by a measurement of a characteristic, which changes with time, of the drum and/or the motor, wherein the measurement is made when the drum reaches a predetermined speed which lies between the washing speed and the spinning speed.”

I should also say for the avoidance of doubt that the impression that other characteristics can be used is not overturned by the appearance of the words “according to the invention” on page 6 of the translation in relation to the current measuring embodiment. In summary, I am satisfied that the overall teaching of the specification when properly construed is that other time varying parameters than motor current could also be used.

31 There is a further sentence in the generalising paragraph on page 7 which reads:

“It is likewise possible by means of a converter to regulate the behaviour of the angular acceleration of the drum directly, which angular acceleration is the origin of the changes in the electrical characteristics of the motor.”

This sentence was interpreted in very different ways by the parties and was the subject of much argument. In short, BSH argued that it taught the use of a tachogenerator to measure drum speed and to provide a feedback signal for speed control of the drum. Whirlpool felt it was not very clear but that at best it merely linked angular acceleration to the electrical characteristic being assessed, suggesting that angular acceleration could be varied to alter the current drawn.

32 This sentence is certainly not clear, and I am sure the skilled person would recognise that the writer had not expressed what was in his mind very well. However, I would expect the skilled person to approach the disclosure constructively, to work out if possible what was intended. On that basis, I am satisfied that they would come to the conclusion that the word “regulate” here refers not to the complete control loop but to that part of the loop which determines whether there is unbalance, for two reasons. Firstly, the word is used in precisely this sense earlier in the specification, on page 6 of the translation, in the use of the term “regulating system” to describe the block S in the control loop of the embodiment described. This block is said to provide an output signal when the current exceeds a threshold. The block certainly does not control the motor itself, since that is the function of the next block, the so-called “motor-regulating module”. Secondly, and as Mr Mellor argued, the sentence makes no sense if “regulate” refers to the whole control loop because “direct” control of the angular acceleration of the drum would imply an electromechanical arrangement much more clumsy than the prior art electromechanical monitoring arrangement already dismissed as unsatisfactory on page 2 of the specification. On this basis, I am satisfied that the skilled person would see this passage as teaching the detection of imbalance by monitoring the motion of the drum directly, and in particular its angular acceleration. I do not accept, however, that the skilled person would necessarily interpret the word “converter” in this passage as meaning “tachogenerator” as proposed by Mr Mellor. There is nothing to support such an assertion.

Novelty of claims 1 and 5

33 I will now turn to the first ground for revocation. The applicants assert that the present invention lacks novelty in the light of the Philips specification. I do not agree. I can find no express teaching of speed measurement in Philips. In particular, the sentence on page 7 just discussed still only expressly teaches monitoring the angular acceleration, and whilst angular acceleration can be derived from a speed measurement, it can also be monitored in other ways. Thus Philips contains no clear and unmistakable directions” (to quote *General Tire, supra*) to measure speed, and on this count alone, the invention is novel over the Philips disclosure. I also observe that other features set out in claims 1 and 5 are missing. There is no disclosure of the use of a tachogenerator to measure drum speed for example. Mr Mellor argued that such further features were not inventive, but his line of argument is really more appropriate to inventive step than to novelty and I find that the patent in suit is novel having regard to the cited prior art.

Obviousness of claim 1: applying the Windsurfer tests

34 I must now turn to the second ground for revocation, obviousness. The first *Windsurfer* step is to identify the inventive concept embodied in the patent in suit. As Mr Mitcheson accepted, the pre-characterising section of claim 1 acknowledges that it was known to construct a washing machine using a tachogenerator producing an a.c. output signal proportional to the speed of the motor and connected so as to form a speed control loop to bring the drum to a wash speed and then a higher, spin speed. and that it was also known to use a “distribute ramp” to take the drum from its wash speed to an intermediate speed prior to accelerating to full spin speed. Taking this as a starting point, and comparing the characterising section of claim 1 with the acknowledged prior art reveals the inventive concept to be the idea of detecting imbalance by monitoring motor speed whilst the drum is being held at the intermediate speed. I observe that whilst the claim talks about monitoring speed “changes”, the embodiment actually detects whether the speed drops below a threshold, so the idea of “changes” needs to be given a suitably liberal interpretation. Mr Mitcheson put emphasis too on the use of a single tachogenerator for both the conventional speed control and the imbalance detection. I will return to this later, but to me it does not come across as a particularly crucial part of the inventive step, although I accept it is a requirement of claim 1.

35 The second *Windsurfer* step is to assume the mantle of the normally skilled but unimaginative addressee in the art at the priority date and to impute to him what was, at that date, common general knowledge in the art in question. As I found above, the skilled addressee in this case would be an electrical engineer involved in the design of washing machine control circuits. This engineer would have a good knowledge of motor control technology and the specific requirements of such technology as it was applied to washing machines at the time. Mr Mitcheson accepted that the skilled addressee would also be familiar with the sort of things discussed in the Jacobs paper.

36 The third step is to identify what, if any, differences exist between the matter cited as being “known or used” and the alleged invention. The differences between the disclosure in Philips and the present invention were helpfully set out by Mr Mitcheson, and using that as a basis, I would identify the following key differences: a) the measurement of the speed of the motor to indicate imbalance, b) the use of a tachogenerator to measure the speed, and c) the use for this purpose of the tachogenerator already present to control the

speed of the motor. This is not precisely the same as Mr Mitcheson's formulation. He included in c) the feature that imbalance detection was carried out in the same integrated circuit that was responsible for the speed control. That is not a feature of the invention as claimed, so I have not included it as a difference over the prior art. However Mr Mitcheson proposed a distinction in this respect intended to support the inventiveness of the integrated speed control and imbalance detection, and I deal with that below

37 The fourth step is to ask whether, viewed without any knowledge of the alleged invention, those differences constitute steps which would have been obvious to the skilled person, or whether they require any degree of invention. Considering first the idea of using speed to measure imbalance, I reviewed the teaching of the Philips specification above and found that there is no specific teaching of the monitoring of characteristics other than motor current to determine imbalance, but that the skilled person would have been led to consider other characteristics. When the skilled person turns his or her mind to what other characteristics might be worth considering - and in particular, what characteristics of the drum might be measured, as he is directed to do by the repeated statements in the claims and description that the invention resides in the measurement of a time varying feature "of the drum and/or motor" - then an answer is staring him in the face on page 6 of the translation. Page 6 explains that the motor current varies:

"... because the speed of rotation of the drum is not very constant in the case of an imbalance, but, due to the unbalanced loading, the drum is braked during the first half of the revolution (the motor M thus taking up more current, so that the module can keep the motor speed constant) and is accelerated during the second half of the revolution due to the unbalanced loading (because of the fact that the current taken up by the motor reduces)."

Whirlpool's own witness, Dr Williamson, accepts that the speed variation described here is well known and he provided much the same sort of explanation of the variation of speed and motor current due to the action of gravity against the unbalanced load in paragraph 5.2 of his witness statement. Taking the Philips disclosure and the skilled person's appreciation that as a matter of general knowledge it was known to use speed measurement and speed control of washing machine drums, I do not consider it would have required "any degree of invention" to appreciate that speed variations could have been used instead of motor current variations for the detection of imbalance. I observe that I have reached this conclusion without having to rely on the disputed sentence on page 7 of the translation.

38 As Mr Mitcheson submitted, it is often the case that once a step has been pointed out, it is easy to say in retrospect that it was an obvious step to take, whereas in order for the inventor to come up with the idea in the first place, it would be necessary for him to have some motivation to look for the inventive idea and to select that particular step when there would have been a large number of other developments of greater or lesser utility that might have been possible. Mr Mitcheson quoted the review in *Hallen Co. v Brabantia* [1991] RPC 195 of earlier cases in which this point had been considered. Slade LJ on page 212 said that:

"... one cannot assume that the skilled man simply makes technical trials for the sake of so doing."

and approved the proposition that:

“... the notional skilled man should not be expected to try all combinations unless he has a problem in mind and particular combinations might assist him in solving it.”

Mr Mitcheson argued that there was nothing in Philips to motivate the skilled person to try anything other than current. I fully accept the principles set out by Slade LJ, but disagree with the conclusion Mr Mitcheson reached in applying them to the Philips disclosure. It seems clear to me that there was the necessary motivation, in the form of the repeated invitations in the Philips specification to measure any suitable time varying characteristic of the drum or motor.

- 39 There are, I accept, two factors which weigh against the conclusion that it would have been obvious to use speed to detect imbalance. First, by drawing attention to angular acceleration, the disputed sentence on page 7 of the translation arguably distracts the reader from thinking of speed. I should say here that I do not agree with Mr Mellor that measurement of angular acceleration means measuring speed. They are related admittedly, but they are different parameters and can be measured using different means. However, this passage, taken with the specification as a whole, does not suggest to the skilled person that angular acceleration is the only alternative option worth considering. The invitation to consider other parameters is broader than that. Second, one gets the distinct impression that it never occurred to the author of Philips that it would be possible to use speed to monitor imbalance. In the context of washing machine control systems which already used speed feedback, as was apparently commonplace, there would already be a speed transducer present and it would be just as simple to monitor speed as current. However, the fact that there may have been one particular skilled person who did not think of using speed does not establish conclusively that it cannot have been obvious to use speed. I am of the view that these two counter factors are not sufficient to displace my *prima facie* finding that the use of speed was obvious.
- 40 The second difference identified above is the use of a tachogenerator. Tachogenerators are a well known way of measuring rotational speed, and I do not think provision of either a speed transducer in general or a tachogenerator in particular can confer an inventive step on the arrangement of claim 1. Any designer of washing machine control systems would have no difficulty in providing an appropriate mechanism, tachogenerator or otherwise for speed measurement. Neither is there any special synergy between the use of a tachogenerator and the rest of the arrangement as claimed. I have no hesitation in finding that the limitation to a tachogenerator is not inventive.
- 41 On difference c) identified above Mr Mitcheson argued, if I understood him correctly, that there can be invention in someone appreciating, at one bound as it were, both that you can use speed to detect imbalance and that the means to put the measurement of imbalance into effect is already there in the form of the existing speed control loop. In other words, it makes the idea of using speed a better one if you appreciate that you can put it into effect economically using equipment that is already provided for speed control. I agree that there is more likely to be an inventive contribution when an inventor has to take a step of this sort, but I do not think it was necessary to do so in the present case. My finding above was that a skilled person would have been led by Philips to consider the use drum speed for imbalance detection. That being the case, the mechanisms for putting the

idea into effect would be apparent to any competent engineer. Consequently I do not think the idea of using the same tachogenerator for both speed control and imbalance detection confers inventiveness.

42 Mr Mitcheson also advance the related proposition that the combined speed and imbalance control circuits described in the Whirlpool specification provide an advance over the Philips disclosure which, he said, did not envisage combining the existing motor control and imbalance detection. As I indicated above, this feature is not written into any of the claims, but quite apart from that I do not agree with his proposition. It seems clear to me that Philips clearly describes integration of the two control systems. Page 3 of the translation says the electronic elements of the imbalance system “are accommodated in simple manner in the so-called “black box” of the appliance together with the motor-regulating module.” and it is clear this is not simply physical co-location since the same regulating system is used to handle both the imbalance current intensity signal and the normal motor control signals. As stated on page 6 for example, referring to the changes in current intensity due to imbalance, “these changes in the intensity of the current I through the motor are used to generate signals which the regulating system S feeds to the motor-regulating module CM.” In my view, Mr Mitcheson is quite wrong in saying that the imbalance detection and drum control are entirely separate in Philips and I do not think he is able to show any differentiation over Philips in this respect.

43 There are some remaining loose ends. The Whirlpool patent includes a limitation in claim 1 that the cycle uses a distribute ramp. Philips does not specifically refer to a distribute ramp in its description so the argument might be put that this too is a difference between the prior art and the patent in suit that needs to be considered for its effect on inventiveness. Mr Mitcheson did not in fact raise this as an issue and I think rightly so. Both the Philips and the Whirlpool specifications refer to the prior art BDA Eastall specification mentioned above, which does describe a distribute ramp. This was clearly a technique within the common general knowledge of washing machine designers and can be readily imputed into the Philips disclosure. I do not think it contributes an inventive step.

44 Mr Mitcheson also made something of the requirement in claim 1 that the tachogenerator should produce an a.c. output proportional to speed. I am satisfied from the evidence (and indeed from my own knowledge as an electrical engineer) that the simplest and most common form of tachogenerator produces an a.c. output whose frequency is proportional to speed, so there can be nothing inventive in this limitation. In any case, claim 5 does not require an a.c. output, so that aspect of the limitation would not help him in respect of this claim. In addition, I doubt whether it is correct to interpret “proportional” in the present claims as meaning strict mathematical proportionality since this is manifestly not necessary to achieve the desired end. Indeed, the embodiment described actually detects imbalance by monitoring the a.c. cycle length, and this is inversely proportional to speed, reinforcing the view that “proportional” in the claims has to be construed loosely. I do not consider these features introduce any inventive limitation into the claims.

45 In summary therefore, I find that claim 1 lacks inventive step in the light of the Philips specification.

The other claims

- 46 Both sides took the view that claim 5 would stand or fall with claim 1. Claim 5 differs in some minor respects from claim 1, most significantly in the fact that if imbalance is detected, claim 5 requires that the motor is prevented from moving on to spin speed. However, this is precisely what occurs in Philips and the other prior art and so I do not consider this variation puts claim 5 in a different position to claim 1. I therefore find claim 5 also to lack inventive step.
- 47 The subordinate claims do not *prima facie* appear to add anything inventive to claims 1 and 5. Mr Mitcheson accepted that for purposes of this hearing he did not rely on them having any independent validity. It is not therefore necessary for me to consider them in detail and they fall with claims 1 and 5.

Conclusion

- 48 In conclusion therefore, I have found that the invention claimed in claims 1 to 6 of EP(UK) 0071308 is novel but lacks an inventive step.
- 49 Mr Mitcheson did not address me on whether Whirlpool wished to be given the opportunity to amend the claims should the existing claims be found invalid. In the absence of a good reason not to do so, it is usual before issuing an order to revoke a patent to afford the patentee an opportunity to submit amendments, and I will follow this practice in the present case.
- 50 Accordingly, as provided under section 72(4), I order that patent number EP(UK)0071308 shall be revoked unless the specification is amended under section 75 to the satisfaction of the comptroller. To that end I allow the proprietor two months to submit to the Patent Office proposals for amendments. A copy should be sent to the applicant for revocation, who will then have a period of one month to submit any comments thereon to the Patent Office, copied to the proprietor. I will then determine how matters should proceed. In the event that no amendments are submitted within the specified period, I will issue a formal decision revoking the patent.

Costs

- 51 Mr Mellor and Mr Mitcheson made no specific representations on costs and were content for me to make an assessment on the standard Patent Office scale. Since this action commenced before 22 May 2000, the old scale applies. The applicant for revocation, BSH Bosch and Siemens Hausgeräte GmbH has been successful and I therefore order Whirlpool Europe BV to pay them £1000 as a contribution to their costs. This sum should be paid within two months from today, payment to be suspended in the event that an appeal is lodged.
- 52 If Whirlpool do submit amendments to the claims, necessitating further work on BSH's behalf, I will make an appropriate further costs order.

Appeal

53 This is a substantive matter so the period within which any appeal to the Patents Court from this decision must be lodged is six weeks.

Dated this 5th day of February 2001

P HAYWARD

Divisional Director, acting for the Comptroller

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