



Neutral Citation Number: [2012] EWHC 1920 (Pat)

Case No: HC10 C03913

**IN THE HIGH COURT OF JUSTICE**  
**CHANCERY DIVISION**  
**PATENTS COURT**

Rolls Building  
7 Rolls Buildings  
London EC4A 1NL

Date: 12/07/2012

**Before :**

**HIS HONOUR JUDGE BIRSS QC**  
**Sitting as a judge of the High Court**

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**Between :**

**SCHENCK ROTEC GMBH**  
**- and -**  
**UNIVERSAL BALANCING LIMITED**

**Claimant**

**Defendant**

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**Richard Davis and Ben Longstaff** (instructed by **Howes Percival LLP**) for the **Claimant**  
**Denise McFarland and Stuart Baran** (instructed by **George Green LLP**) for the **Defendant**

Hearing dates: 15th -18th, 22nd, 23rd May 2012  
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**Approved Judgment**

I direct that pursuant to CPR PD 39A para 6.1 no official shorthand note shall be taken of this Judgment and that copies of this version as handed down may be treated as authentic.

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**HIS HONOUR JUDGE BIRSS QC**

## His Honour Judge Birss QC :

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### *Introduction*

1. This is an action for infringement of European Patent (UK) No. 1 520 161 entitled “Device and Method for Fixing Balancing Weights to Rotors, in particular to Articulated Shafts or Cardan Shafts”. The patent has a priority date of 4<sup>th</sup> July 2002 and was granted on 12<sup>th</sup> September 2007. The claimant (Schenck) is the proprietor. Schenck contends that the defendant (Universal Balancing) has infringed the patent by selling a machine called the KISS 234. Universal Balancing denies infringement and counterclaims for revocation of the patent. Universal Balancing also contends that it has the benefit of a defence under section 64 of the Patents Act 1977 and further that it has a defence to any damages claim (in the event it is found to infringe a valid claim) pursuant to section 62(1) of the 1977 Act. Schenck denies that these defences are made out and maintains that the patent is valid as granted. It also seeks to amend the claims if the court finds that claim 1 is invalid.

### *Background*

2. A rotating body is called a rotor. The rotation axis of a rotor is defined by the centre points of its bearings. If the centre of gravity of a rotor does not coincide with the rotation axis, then as the rotor spins, its weight will not be evenly distributed about that axis. This means it will not rotate evenly. It will be out of balance. The imbalance creates a force which acts on the rotor bearings.

3. Force is a vector quantity – it has magnitude and direction. The force rotates with the rotor and is synchronised with it. The force or forces give rise to synchronous mechanical vibrations which are in proportion to the imbalance. In order to correct the imbalance, the mass distribution of the rotor has to be changed. This may be done by adding, removing or shifting mass elements. This case is concerned with corrections which are performed by fixing a small weight to the outside of the rotor as a counterbalance. In this field the term “unbalance” is sometimes used instead of imbalance.
4. Balancing machines are machines used to balance rotors. The machines spin the rotor and measure the imbalance. They then calculate the imbalance correction needed. One application of balancing machines is in the automotive industry. In a motor vehicle there will be at least one drive shaft which transmits the drive power to the axles. These shafts are also known as propeller shafts or prop shafts. A typical drive shaft will be articulated by means of a universal joint or joints. Articulated shafts are also known as “cardan shafts” in honour of Jerome Cardano, a Professor in Bologna and Milan in about 1500 who first described this type of shaft.
5. In vehicle drive shafts the long rigid portions are made from steel pipes. The uneven wall thickness and defects in the straightness of the pipe material mean that the drive shaft, as a rotor, may well be out of balance to a greater or lesser extent. In a car production process each shaft is checked and any imbalance corrected (if possible). This imbalance is corrected by fixing correction weights to the outside of the shaft. These weights are small steel plates of different sizes and therefore different masses. The weights are pre-formed so that their radius matches the drive shaft to be balanced.
6. In practice balancing weights are placed at more than one spot along the length of a drive shaft. The planes perpendicular to the axis of the shaft at which the weights are placed are called correction planes or balance planes. In general one correction plane per articulation is sufficient and necessary for imbalance correction on such a shaft.
7. The weights are generally fixed by resistance welding and generally the balancing machines have at least one weld gun or weld turret which can be used to weld on the weight. Resistance welding passes a large electric current through the workpiece and relies on resistive heating to melt the metal. There are two kinds of resistance welding techniques in issue, projection welding and spot welding. They are addressed in more detail below.
8. In a production line the balancing machine will be configured to balance a particular drive shaft. In some balancing machines there will be a weld turret for each compensation plane. In others there may be two weld turrets for three compensation planes and the operator may have to move the weld turret from one place to another. The degree to which balancing machines are automated varies. The weights need to be welded not only at the correct correction plane but also on the correct spot around the circumference of the shaft. Some balancing machines perform “auto indexing” whereby the machine automatically rotates the shaft to present the correct spot on the circumference to which the weight is to be welded.
9. During these proceedings a convention was adopted for describing the axes in space on a balancing machine. The X axis runs horizontally along the length of the drive shaft. The Y axis runs horizontally from back to front, towards and away from a

machine operator standing in front of a balancing machine. The Z axis runs vertically up and down. As an illustration, in practice on a balancing machine the weld gun may start at rest away from the drive shaft and need to move forward in the Y axis in order to locate the weld electrodes above and below the shaft. The gun may need to move in the X axis to sit at the correction plane. Then the electrodes may need to come together on the shaft by moving in the Z axis. I should note in passing that balancing machines do not necessarily have weld guns which move in all these axes.

*The proceedings*

10. In July 2010 the Managing Director of Universal Balancing, Steve Fowler, met with Roy Fulton and Nigel Best of Schenck's UK office. At the meeting Schenck's representatives raised the patent and explained Schenck's view that the KISS 234 machine was an infringement. Mr Fowler contends that this is the first time he or his company were aware of the patent.
11. Schenck issued the claim form on 19<sup>th</sup> November 2010. The case management conference took place in March 2011 and directions were given for a trial, not before January 2012. The case was listed for trial in May 2012.
12. In the pleadings, the prior art relied on by Universal Balancing included two allegations of prior user as a result of the supply by Universal Balancing of balancing machines to GKN. The first was a machine supplied in about 2001 and painted green. It is referred to as the Green Machine. It was built by Universal Balancing at GKN's behest using the base of a Schenck balancing machine owned by GKN. The second prior user was another machine supplied by Universal Balancing to GKN and built on an old Schenck base. It was supplied in 2002. It was painted blue (the Blue Machine). Also pleaded as prior art were: a GKN drawing of a prop shaft for a Land Rover Freelander with balancing instructions on it; a German patent application DE 4440812 A1 in the name of the car company BMW; a prior supply of welding machines by a US company called LORS; a US Patent 3,558,847 (Tuffalloy); a US patent 3,858,024 (Duro Dyne) concerned with welding ducts, and a US patent 3,415,972 (Bassett) concerned with welding printed circuit boards.
13. During the proceedings Schenck's legal representatives contended that the descriptions given by Universal Balancing of the KISS 234 itself and the prior used machines were inadequate and pressed for further details. Some were given but Schenck maintained that the details were still vague in certain respects.
14. In February 2012 the defendant applied to amend the pleadings to add a further item of prior art, known as the 1999 Machine. This was a Schenck machine which was supplied to GKN in about 1999. The amendment was permitted with a tight timetable to ensure the matter came on for trial in May 2012 (see the order of Vos J dated 29<sup>th</sup> February 2012).
15. The trial started on 15<sup>th</sup> May 2012. Richard Davis and Ben Longstaff appeared for Schenck instructed by Howes Percival LLP. Denise McFarland and Stuart Baran appeared for Universal Balancing instructed by George Green LLP.

*Striking out of evidence*

16. As part of his opening, Mr Davis applied to strike out parts of the defendant's evidence. This was on various grounds. An important one was that the defendant's witness statements and expert's reports appeared to include the results of experiments for which no proper notice had been given. Following an indication from me that I thought much, but not all, of the material of which complaint was made did indeed consist of experimental evidence which had not been witnessed nor was the subject of a notice, Ms McFarland sensibly withdrew that evidence.
17. Mr Davis also sought to strike out a passage of evidence in one of the reports of Prof Sheldon, Universal Balancing's expert, which related to insufficiency of disclosure. This was not a pleaded ground of invalidity and was struck out. Mr Davis also sought to strike out a witness statement relied on by the defendant from Timothy Ashton, an experienced patent attorney at the firm Forrester Ketley. It consisted entirely of arguments why the patent amendments should not be permitted. It was unnecessary. It seemed to me that the defendant should be entitled to run all the arguments expressed in Mr Ashton's statement (if they wished), but there was no need for the statement as evidence. I struck it out but permitted the document to stand as part of the defendant's pleaded case on the amendments.
18. In addition to the points above, Mr Davis also submitted that parts of Prof Sheldon's report should be struck out as they amounted to opinions expressed without any or any adequate factual basis. I rejected that application with reasons to be given in this judgment. My reasons were these:
  - i) It was not clear to me that there was in fact a lack of proper basis in Prof Sheldon's report. To reach that conclusion depends on interpreting his evidence. If the problem was serious it could and should have been addressed in detail in correspondence, by questions to the expert under the CPR r 35.6 procedure or by a meeting of the experts.
  - ii) When the point was raised in correspondence all that happened was that the claimant simply objected to the evidence and did not ask any questions at all. The response from the defendant was (amongst other things) to propose a meeting of the experts. The claimant refused. That was not a sensible attitude. A meeting did eventually take place but that was at the trial. In my judgment the claimant's objection in correspondence was simply procedural manoeuvring. It was an attempt to allow the claimant to say that the point had been raised before trial without actually engaging in the matter in a real way. It does not justify driving forward with a strike out application on the morning of trial.
  - iii) The potential prejudice to the claimant caused by this evidence would be that the witness explains the factual basis for his opinions in cross-examination and thereby takes the claimant by surprise. I accept that that is undesirable and potentially prejudicial. However in this case the claimant recognised the problem in advance and had the means to take steps to alleviate the risk of prejudice. It chose not to take those steps.

*Clarification of the parties' cases*

19. In the course of the opening both sides clarified their cases:

- i) For the claimant, the position on amendment of the claims was unclear. It was not clear precisely what amendments the claimant contended for in what circumstances. Mr Davis clarified his case. A single set of proposed amended claims was provided and it was made clear that the amendment is sought if claim 1 as granted is found to be invalid.
  - ii) As for the defendant, it was unclear how many of the pleaded invalidity grounds were really relied on. Ms McFarland clarified her case on invalidity. None of the LORS welding machines, the Tuffalloy patent, the Duro Dyne patent or the Bassett patent were relied on for allegations of lack of novelty nor were they relied on as starting points for an allegation of lack of inventive step. After that the LORS welding catalogue was referred to in cross-examination but none of those three patents were referred to again at all.
20. It can be seen therefore that extensive clarifications and adjustments to each party's case took place at the opening of this trial. It is a pity that many of these matters were not sorted out in advance. It is a case in which a pre-trial review would have been well worthwhile.

*The witnesses*

21. Schenck called one witness of fact, Mr Andreas Buschbeck. Mr Buschbeck is the manager of technical consulting and patent representative of the claimant. His evidence was directed to the Section 62 defence and the 1999 Machine. He was a good witness.
22. Schenck's expert was Dr. Ing. Dieter Thelen. He was an ex-employee of Schenck. In the 1960s Dr Thelen qualified from the Technische Universität in Darmstadt with a Dipl. Ing., in the 1970s he worked as an Assistant Professor at the university in the Institute for Jet Propulsion Systems. He received the degree of Dr. Ing in 1979. In 1978 Dr Thelen joined Schenck Rotec as a mechanical engineer responsible for the design and development of balancing machines and spin test systems. For 10 years he was head of product development at Schenck and in 2006 he retired. Since then Dr Thelen has worked as a consultant engineer to Schenck. Dr Thelen gave his evidence in English although plainly his mother tongue was German.
23. Miss McFarland made no suggestion that Dr Thelen deliberately set out to mislead the court but she submitted he was in an effectively impossible position and that someone with that working experience was bound, when there was the possibility of conflicting views, to prefer the views of the claimant. She submitted that when this point was put in cross-examination he was unable to provide a straight answer. Miss McFarland also submitted that Dr Thelen tended to obfuscate rather than give clear yes/no answers to even clear questions. One example relied on was a debate about welding in the BMW application.
24. I reject these submissions. I found Dr Thelen to be an excellent witness and I am grateful for his evidence. Despite his close working relationship with Schenck I think he gave his evidence fairly and objectively. I reject the charge of obfuscation altogether. Dr Thelen was simply puzzled that the BMW application did mention welding when it is almost universally concerned with gluing. When asked about his independence I did not regard Dr Thelen's answer as less than straight. He had

explained that he saw himself as independent and the important point was that he was concentrating on the matter in hand.

25. Universal Balancing called three witnesses of fact to give oral evidence, Paul Fowler, John Tinsley and Steve Fowler.
26. Paul Fowler is an employee of Universal Balancing and is Steven Fowler's younger brother. His position in the business is Development Manager and Marketing Manager. Mr Davis did not criticise Paul Fowler but submitted his evidence did not assist. I will deal with any evidence from Paul Fowler in context.
27. John Tinsley is a retired Senior Project Engineer from GKN Plc. He worked for GKN from 1982 to 2007 in a wide variety of positions. He was responsible for buying expensive capital equipment such as balancing machines, was also responsible for the assembly division of GKN Driveline and held the role of Global Welding Expert for the GKN Automotive Division. GKN Driveline is one of the world's leading manufacturers of automotive driveline components. He is clearly more skilled and inventive than the notional person skilled in the art.
28. Mr Davis submitted that Mr Tinsley was a slippery witness. He was not. One point taken was that Mr Tinsley fell into what Mr Davis called a trap about whether he had been sent a copy of the Schenck patent or not. Mr Tinsley's witness statement explained that Schenck had faxed him a copy (in German) of the patent in suit in 2004/2005 with no covering correspondence. Any patent lawyer seeing that evidence would understand that he must have been sent the patent application rather than the granted B specification of the patent because grant did not take place until 2007. There was nothing in the point to impugn Mr Tinsley (who was not established to be a patent lawyer). My impression of Mr Tinsley was that he was an honest witness doing his best to help the court.
29. However although I have no doubt whatever about Mr Tinsley's honesty, I found his evidence to be a little confused and unclear in relation the GKN Land Rover Freelander document. Mr Tinsley's approach was that of a person who thought he knew how GKN operated in practice and started from the position that the document must presumably reflect that. In fact on a careful analysis the document is somewhat different and I could see that Mr Tinsley had difficulty reconciling it with what he thought.
30. Steve Fowler is the Managing Director of Universal Balancing and is responsible for its day to day operations. He is an engineer and clearly has considerable knowledge and expertise in the field of rotor balancing. Mr Davis submitted he was evasive but I did not detect that in his cross-examination. Mr Davis also submitted that Mr Fowler's written evidence did not distinguish properly between events which did happen and things which could have happened. There was some force in that point but it was a minor matter.
31. Prof Sheldon was called as an expert by Universal Balancing. He is Emeritus Professor of Engineering and Design at Anglia Ruskin University. He has unrivalled experience in mechanical engineering and has held a number of prestigious posts of various kinds over the years. He is an experienced expert witness.

32. Mr Davis submitted that Prof Sheldon was guilty of evasion to the point of dishonesty. I reject that. In my judgment Prof Sheldon was neither of those things but what the cross-examination did expose was that he had very little specific expertise relevant to the technical issues in this case. For example although Prof Sheldon was clearly familiar with the concept described in this case as vector splitting, he had not heard that name being given to the technique. This was a reflection of the fact that Prof Sheldon was not familiar with balancing machines (i.e. the kinds of machines the case is concerned with) as opposed to being familiar with the general concept of balancing (which I am sure Prof Sheldon knew about). In the field of balancing machines in particular, the technique is called vector splitting. Another example was Prof Sheldon's ignorance about the pressure required to perform resistance welding. He said it required "relatively minimal pressure" when in fact it uses very considerable pressure. Miss McFarland submitted that, as shown by the re-examination, Prof Sheldon had only been drawing a distinction between the pressure needed to grip a shaft in order to resist a torque and the pressure needed for welding. He was indeed drawing that distinction but that is not the issue. From the cross-examination on the point, it is clear to me that no expert who was knowledgeable about resistance welding to the modest degree to which it is relevant in this case would have said the weld gun applies relatively minimal pressure. It does not do that and the limitations to Prof Sheldon's expertise were thereby exposed.
33. I should emphasise that Prof Sheldon did not in any way seek to pretend that his expertise was focussed on rotor balancing machines. That would have been absurd. However his overall stance was that his experience of balancing in a general engineering context allowed him to assist in this case. I am not so sure. Listening to his testimony generally I got the clear impression that much of his evidence about the technical detail in this case was based on what he had learned for the purpose of these proceedings. That is not much use. The parties are perfectly able to educate the court about technical details directly. Particularly in relation to common general knowledge and inventive step, there is limited value in the opinions of a person who has just learned the technology in order to give evidence in the case. I am not satisfied that I can place much weight on Prof. Sheldon's evidence.
34. Finally I will mention *Tickner v Honda* [2002] EWHC 8 (Patents). Extracts from this judgment were put to Prof Sheldon in cross-examination. Prof Sheldon had appeared as an expert and was the subject of criticism by Jacob J (as he then was). His evidence was found to be clearly and obviously untenable. I have considered Prof Sheldon's evidence before me on its own merits.

*The person skilled in the art*

35. Mr Davis submitted that the person skilled in the art in this case was a graduate mechanical engineer with some experience of balancing machines. He further submitted that the skilled person knew about balancing machines and not merely the balancing of machinery. This was a rhetorical point referring to Prof Sheldon's evidence. The point Prof Sheldon was making was that the balancing of rotors in general has a wide application and his experience in the balancing of all sorts of machinery equipped him to assist in this case. In my judgment Prof Sheldon was right about the wide application of the concepts involved in balancing rotors. However the patent is limited to "balancing machines". They are machines used to carry out a balancing operation on a rotor. The skilled person will have experience in

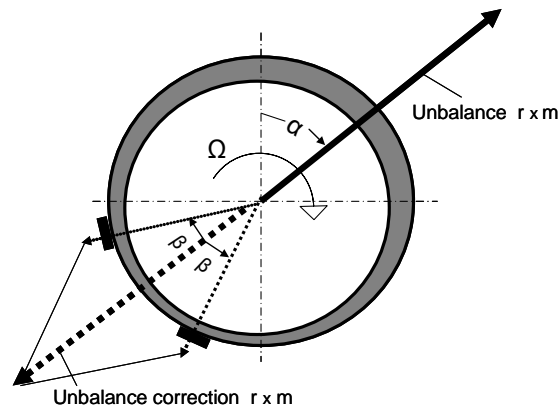


the field of balancing machines in particular and not just balancing in general. He will be a person working in a company like either party to this dispute, designing and making balancing machines.

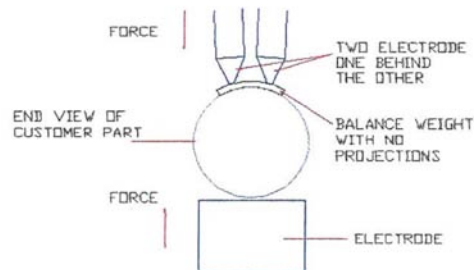
36. Ms McFarland emphasised that the patent was not specific to any particular type of rotor. I agree. There is no limitation on the nature of the rotor to be balanced (save that it must have multiple compensation planes). Although the case has focussed largely on drive shafts (or “prop shafts” or “cardan shafts”), the patent is not so limited.
37. However I did not understand that it was seriously disputed that a skilled person would know about vehicle drive shaft balancing, even though the patent is not limited in that way. All the prior art relied on as well as the alleged infringement are vehicle drive shaft balancing machines. From the point of view of inventive step over the particular art relied on, the context in which the issue arises is plainly vehicle drive shaft balancing. To consider the skilled person in that context as someone without automotive experience would be unreal. I am not aware that anything in fact turns on it but it seems to me that the skilled person, who will be a mechanical engineer with some experience of balancing machines, will have some experience of automotive drive shaft balancing.

*The common general knowledge*

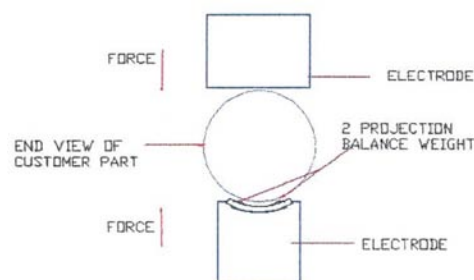
38. As a mechanical engineer the skilled person will be very familiar with basic mechanical engineering concepts which arise in balancing. These include all the matters set out in the Background section above. The labelling convention of the X, Y and Z axes may or may not have been common general knowledge but as far as I am aware nothing turns on it.
39. One matter which was emphasised by Universal Balancing and I find was common general knowledge was concerned with the specifications of rotors and of rotor balancing. When it comes to the correction of imbalance of any specific rotor, the details for that specific rotor will be dictated by the rotor manufacturer or the manufacturer of the equipment or vehicle for which the rotor is intended. All the witnesses before me acknowledged that this manufacturer will have undertaken considerable testing and calculations in order to ascertain acceptable tolerances and parameters for their particular rotor application.
40. Another matter of common general knowledge was vector splitting. Dr Thelen’s view was that this was common general knowledge. Although Prof Sheldon was not aware of the expression “vector splitting” itself, he confirmed that the technique was part of the common general knowledge. In vector splitting two weights are used instead of a single weight to correct the imbalance. The two weights are located at different places on the same correction plane so that the vector sum of their effects provides the appropriate correction to counteract the imbalance. Vector splitting can be illustrated as follows:



41. If a single weight was to be used, it would be placed at the point the dashed line crosses the circumference of the rotor. With vector splitting two weights are placed on either side of the position the single weight would have been located. In effect the balancing vector has been split in two. In practice the two masses chosen are always equal to each other and therefore each is placed at the same angle  $\beta$  to the dashed line.
42. Another aspect of common general knowledge was spot welding and projection welding. One standard form of spot welding can be shown as follows:



43. The balance weight is a smooth piece of metal curved to correspond to the shaft diameter. In this configuration the weight is placed on top of the shaft. The lower electrode rises to touch the rotor (called "customer part" in the diagram above) and the two upper electrodes come down to touch the weight. In order to weld the weight a high current is passed between the electrodes and a force is applied to squeeze the pieces together to make a good weld. There are other spot welding configurations but nothing turns on them.
44. A standard arrangement for projection welding is as follows:



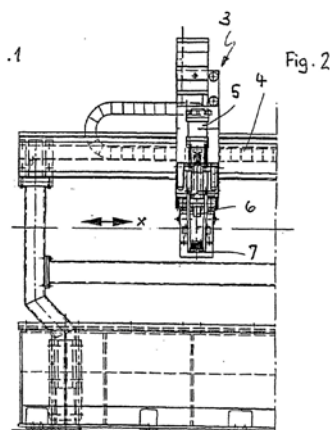
45. When the machine is in this configuration, once the imbalance has been measured and the machine has indicated the correct weight to be applied, the operator places the weight on the lower electrode. The electrodes come together and the weld is created. The weight itself is not merely a smooth piece of metal, it has a projection or projections on it (usually one or two). When the current is passed through the electrodes the welding takes place at the projections. There are alternative projection welding arrangements which were also common general knowledge but nothing turns on them.
46. A question I have to decide is whether stacking of weights was common general knowledge. Sometimes one weight would be welded right on top of another. For example say a 20g weight was needed and the operator only had 10g weights. Two 10g weights would be welded into a stack adding up to 20g. This could be done in two distinct welding operations. So the first weight would be welded on as normal and then once that operation was complete, a second weight would be placed in position and welded a second time, right on top of the first one. However another way of creating a stack of weights would be to place both weights in position in one go, and then perform a single welding operation, welding both weights together in place at the same time. The first method could be called sequential stacking and the second method could be called all-at-once stacking.
47. Schenck submitted that stacking of weights was not common general knowledge. Universal Balancing submitted that it was. In my judgment the concept of stacking weights was part of the common general knowledge but there is more to it than that. I was struck by Dr Thelen's position on stacking. He was clearly familiar with it, i.e. with both sequential stacking and all-at-once stacking, however he also clearly regarded it as bad practice. I understood Mr Tinsley's evidence to be that stacking was something which happened at GKN and was something he was very familiar with. That is clearly supported by the GKN Land Rover Freelander drawing which carries dates in 2000 and 2001 and shows a stack of two weights on a shaft. Mr Tinsley did not say it was bad practice but he did at one stage mention operator errors.
48. Read carefully the text on the GKN Land Rover Freelander drawing is talking about sequential stacking. The key words are "if more than one balance weight is required it can be placed directly on top of initial balance". However I reject the argument that this undermines the idea that all-at-once stacking was common general knowledge. Taking the evidence as a whole I find that both sequential stacking and all-at-once stacking as concepts were common general knowledge.
49. There are clearly problems inherent in stacking. For one thing balancing is a precise operation. The effect of a pile of two 10g weights on top of each other on the periphery of a rotor is not the same as the effect of a single 20g on the periphery at the same location. The reason is that in the stack, the mass in the second 10g weight is at a greater radial distance from the axis than it would be if all 20g of mass were part of a single weight. How much of a difference this makes will depend on the circumstances. The behaviour produced by a stack is capable of being different from the assumptions used by the computer in the balancing machine when it determined what was needed to balance the rotor. Moreover the weights are shaped to sit on the rotor not to sit on top of each other and that can cause difficulties.

50. There is no particular difficulty about sequential stacking from the point of view of the welding process but there is a problem with all-at-once stacking. Dr Thelen had seen all-at-once stacking done via spot welding although his view was that it was not reliable and risked an inferior quality of weld at the weld points. This is because two simultaneous welds need to form and the electrical resistance of the two different regions may not be the same such that there is too much heating in one place and not enough at the other. However there was evidence that this could be accommodated by applying more current via the weld gun. I took Mr Tinsley's evidence to be that at GKN this sort of thing produced a satisfactory result. No doubt it was potentially less reliable than welding a single weight at a time but I find that all-at-once stacking by spot welding was common general knowledge and was regarded as something which could be done and was done.
51. However projection welding was a different matter. Dr Thelen's view was that it was not possible to perform all-at-once stacking via projection welding. He had never seen it done. This is because the projections of the lower weight will abut the recesses in the upper weight leading to a totally unreliable weld. Dr Thelen explained that he thought nobody had ever done this but when talking to a former colleague he found that that colleague had seen it but the holders had been specially adapted to offset the projections in order to make the process work. This is not a point on which I am prepared to rely on Prof Sheldon's evidence. Universal Balancing's position was that all-at-once stacking via projection welding was done and they relied on Mr Tinsley's evidence. However although at one stage Mr Tinsley was referred to projection welding in cross-examination, he did not give specific evidence focussed on the distinction between projection and spot welding. At another point in the cross-examination he referred to putting weights on the product – which is something the operator does in spot welding. In my judgment Mr Tinsley's evidence that sequential and all-at-once stacking was done at GKN is not sufficient to rebut the specific argument about projection welding as opposed to spot welding. Dr Thelen has put forward powerful technical reasons why all-at-once stacking via projection welding is not realistic (subject to special modification of a machine). I am not satisfied that Universal Balancing provided an answer to those technical points.
52. In summary I find that the concept of stacking, both sequential and all-at-once, was common general knowledge. All skilled people knew it was and could be done albeit that it may cause problems. Sequential stacking can be performed by either spot welding or projection welding. All-at-once stacking was only common general knowledge as a technique done using spot welding.

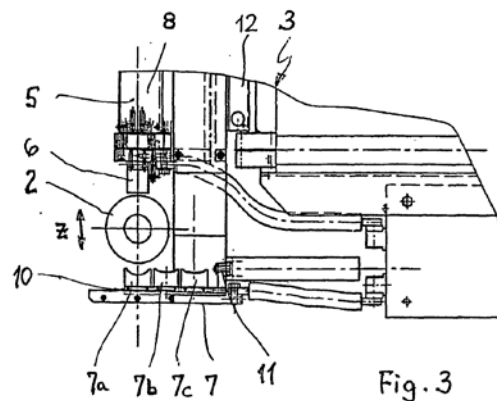
*The patent*

53. The authentic text of the patent is the German text. The English translation has been agreed and it rarely proved necessary to consider the German original.
54. The patent starts with a general statement in paragraph 1. It explains that the invention relates to a device for fastening balancing weights to rotors. The rotors must have a plurality of compensation planes. The invention relates "*in particular to propeller shafts or cardan shafts, preferably in a balancing machine*". The device for fastening weights comprises at least one "*gripper-like device*". With the "*gripper like device*" a balancing weight can be placed on the outer periphery of the rotor and fastened there.

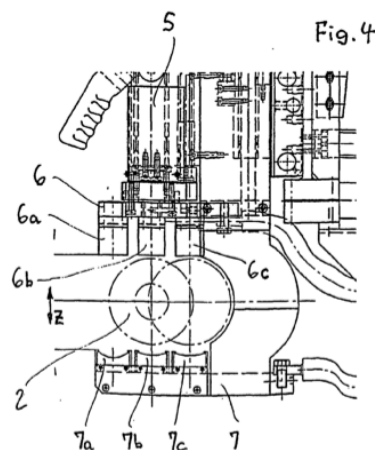
55. Paragraph 1 corresponds to the pre-characterising portion of claim 1. Both use the word “preferably”. The language could be read as if the word “preferably” governed not just the clause “in a balancing machine” but the whole of the rest of the text. In the claim it would mean that almost all of the features of the claim might appear to be inessential. That is not how I read the words either as they appear in claim 1 or in paragraph 1.
56. In paragraph 2 the patent indicates that the devices and methods described are used in “series production to economically balance relatively large unit numbers of rotors”, in other words on a production line. Mr Davis submitted that this means the invention is not concerned with a balancing machine used to balance prototype rotors. I reject that argument. All paragraph 2 means is that the device can be used in a production line. It would not be understood to impose a limitation on the occasions on which the invention could be performed or used.
57. Paragraph 6 indicates that the invention allows for fully automatic operation. The possibility of a second “supplementary” compensation step is mentioned. This refers to the situation in which a weight has been placed, the balance is rechecked and found to need a further balancing operation. The supplementary compensation step is not vector splitting. The paragraph also indicates that a machine operator can service two balancing machines in succession. The point is that the invention can be used to allow the operator to load weights at a single station on the machine. Thus if two machines are placed judiciously the person will not have to move far to load them both.
58. Mr Davis submitted that the advantages were stated generally in paragraph 6. So they are, but if the submission is intended to mean that the claims must be interpreted in such a way that the advantages must always be present, I reject it. For example the claims are not limited to a device which operates automatically.
59. From paragraph 17 onwards the description deals with the embodiments illustrated in the drawings. Two embodiments are shown. Figures 1, 2 and 3 show a device with a single electrode at the top and three lower electrodes at the bottom. Figure 2 illustrates the front view of the balancing machine, as seen by an operator. There is no rotor in place. A rotor would rest horizontally along the X axis marked. The weld gun is shown marked 3. Figure 2 is:



60. Figure 3 shows the weld gun (gripper-like device) in more detail and viewed along the axis of the rotor. A rotor 2 is in position. Figure 3 is:



61. The gripper-like device is item 5 in the figure. The upper gripper unit is 6 and the lower gripper unit is 7. A weight is placed in each one of the three lower electrodes (7a, 7b, 7c). The action of the gripper-like device is described in paragraph 23. The upper and lower jaws close so that the upper and lower gripper units are brought into contact with the rotor. The operation of the device as a whole is described in paragraph 25. For the first compensation plane a weight for that plane is in one of the receivers (7c). It is moved into position aligned with the rotor axis at the compensation plane. The jaws close, pressing the weight against the periphery of the rotor. The weight is then fastened by a welding process using the upper and lower gripper units as electrodes. Once the weight has been fastened, the jaws open and the device is moved to the next compensation plane (by moving in the X axis). A further weight is applied there and in order to do that a different receiver in the lower gripper unit has to be moved into position (say receiver 7b). This involves the lower gripper unit moving in the Y axis. The placing and fastening process is repeated. When all the weights have been fastened, the rotor can be removed and another one put into the machine to be tested and have any imbalance compensated.
62. Paragraph 26 describes an alternative embodiment in which there are three counter elements at the upper gripper unit corresponding to the three receivers in the lower gripper unit. Figure 4 is:



63. There is an issue of construction of claim 7 arising from figure 4 and I will deal with it in context below.

*The claims*

64. Schenck contends that claims 1, 7 and 9 as granted are independently valid and so too are claims 1, 7 and 9 as amended.

65. Claim 1 as granted is set out below. The references A to D and B1/B2 etc. have been added for convenience.

A. Device for fastening balancing weights to rotors comprising a plurality of compensation planes in particular to propeller shafts or cardan shafts preferably in a balancing machine

B. which comprises [B1] at least one gripper-like device [B2] which can be positioned along the rotor axis,

C. with which device a balancing weight can be [C1] placed on the outer periphery of the rotor and [C2] fastened there

characterised in that

D. the gripper-like device is constructed to receive a plurality of balancing weights.

66. Claim 7 as granted is dependent on claim 2. They provide for:

2. Device according to claim 1 characterised in that the gripper-like device comprises two gripper units mounted so as to float relative to each other in the gripper closing direction, the units being jointly movable until they abut with one gripper unit on the rotor and the other gripper unit can be placed on the rotor by relative displacement with respect to the first gripper unit.

7. Device according to claim 2 characterised in that preferably the lower gripper unit comprises receivers for balancing weights which are located one behind the other transversely to the longitudinal direction of the rotor with which receivers in the gripper closing direction respective counter elements are associated in a corresponding number to the other gripper unit.

67. Claim 9 is:

9. Method for fastening balancing weights to rotors by means of a gripper like device wherein a plurality of balancing weights are arranged thereon, wherein the plurality of balancing weights are moved transversely to the longitudinal direction of the rotor and wherein a selected balancing weight is placed on the balancing point at the periphery of the rotor and fastened there.

68. Claim 1 in the form sought by amendment is as follows (the amendments are shown underlined):

A. Device for fastening balancing weights to rotors (2) comprising a plurality of compensation planes, in particular to propeller shafts or cardan shafts, preferably in a balancing machine

B. which comprises [B1] at least one gripper-like device [B2] which can be positioned along the rotor axis,

C. with which device a balancing weight can be [C1] placed on the outer periphery of the rotor and [C2] fastened there,

characterised in that

D. the gripper-like device is constructed to receive a plurality of balancing weights;

E. and wherein means are provided for moving the plurality of balancing weights transversely to the longitudinal direction of the rotor such that a selected balancing weight is placed on the balancing point at the periphery of the rotor and fastened there.

69. Claim 7 in the form sought by amendment is as follows:

Device for fastening balancing weights to rotors comprising a plurality of compensation planes in particular to propeller shafts or cardan shafts preferably in a balancing machine which comprises at least one gripper-like device which can be positioned along the rotor axis, with which device a balancing weight can be placed in the outer periphery of the rotor and fastened there

characterised in that

the gripper-like device is constructed to receive a plurality of balancing weights

and wherein

the gripper-like device comprises two gripper units mounted so as to float relative to each other in the gripper closing direction, the units being jointly movable until they abut with one gripper unit on the rotor and the other gripper unit can be placed on the rotor by relative displacement with respect to the first gripper unit

and wherein

preferably the lower gripper unit comprises receivers for balancing weights which are located one behind the other



transversely to the longitudinal direction of the rotor with which receivers in the gripper closing direction respective counter elements are associated in a corresponding number to the other gripper unit.

70. Proposed amended claim 7 is intended to be identical to granted claim 7. All that has happened is that claim 7 was originally dependent on claims 1 and 2 and instead of cross-references, those claims have been written out fully to create a new independent claim with the same scope as original claim 7. The objective of this exercise is to avoid putting the limitations now to be added by amendment into original claim 1, into claim 7.
71. In the proposed amended claims, claim 9 has not changed.

*Construction*

72. The general legal approach to patent construction is well established. The leading authority is *Kirin Amgen v TKT* [2005] RPC 9. The key point is that construction is concerned with what a reasonable person would understand the author to be using the words to mean. Guidelines on the general approach were given by the Court of Appeal in *Virgin Atlantic v Premium Aircraft* [2010] FSR 10. I remind myself that claims are not construed alone or in the abstract but in their context in the specification; that purposive construction is vital (there may be several purposes and several embodiments) and that one is in the end concerned with the meaning of the language used. Meticulous verbal analysis is eschewed.
73. Some of the points on construction are better dealt with in the context in which they arise but a number may be dealt with now. These are:
- i) “gripper-like device” (claim 1)
  - ii) “constructed to receive” (claim 1)
  - iii) “float” (claim 2)
  - iv) “preferably” (claim 7)

*(i) “gripper-like device” (claim 1)*

74. Although the patent describes welding the balance weights onto the rotor, any skilled reader would see that the claims have been drafted so as not to be limited to welding. Thus what one might have called a weld turret or weld gun needs another name. The English expression used is “gripper-like device”. The skilled person would understand that this is the part of the machine with a pair of members or arms which come together and close on the rotor. When a balancing weight is placed on the lower receiver, the action of the gripper allows the weight to be pressed against the rotor (e.g. patent paragraph 25). If the device is a welding unit the weld can take place.
75. Prof Sheldon’s view was that a weld gun could not properly be called a “gripper-like device” or gripper. He thought that the purpose of gripping the shaft was to prevent turning of the shaft. The German word used in the claims was “zangenartige Einrichtung”. Einrichtung means device and “zange” can be translated as forceps, a

torque wrench, tongs or pliers. The ending “artige” means “like”. Prof Sheldon’s view was that these tools had an entirely different functionality and purpose to weld guns. However neither “gripper-like device” nor gripper (nor “zange”) are terms of art and I do not regard Prof Sheldon’s view on the interpretation of this term as relevant. In any case it would be obvious to any skilled reader of the patent that the gripper-like device could be a weld gun.

(ii) “constructed to receive” (claim 1)

76. Claim 1 requires the gripper-like device to be constructed to receive a plurality of balancing weights. This is functional language. Ms McFarland submitted that this meant that the device had to be capable of (or “suitable for”) receiving a plurality of weights. So, for example, if a stack of 2 or 3 weights could be placed on the lower electrode of a machine then the machine would satisfy this requirement. The point of this was that stacking weights on the lower electrodes of machines formed an important part of Universal Balancing’s invalidity case.
77. Mr Davis’s primary case was that “constructed” referred to intention. In other words the machine had to be designed, in the sense of intended, to receive a plurality of weights. As a fall back he argued that if the words are to be interpreted as suitable for receiving a plurality of weights or capable of receiving a plurality of weights, then he had four points:
- i) The word “constructed” means there has to be some physical construction of the device which achieves that objective;
  - ii) The claim must mean that the device can actually work this way in practice. That would include working in a workshop.
  - iii) The weld produced must be to an appropriate standard for the lifetime of the part (i.e. the prop shaft if that is what the rotor is).
  - iv) The relevant purpose is to receive the plurality of weights so as to be capable of loading them individually.
78. In support of his primary case Mr Davis cited the judgments of Floyd J in *Qualcomm v Nokia* [2008] EWHC 329 (Pat), Peter Prescott QC in *Folding Attic Stairs v Loft Stairs Co Ltd* [2009] EWHC 1221 (Pat), Arnold J in *FNM v Drammock International* [2009] EWHC 1294 (Pat), and Lewison J (as he then was) in *Zeno Corporation v BSM-Bionic Solutions Management GmbH* [2009] EWHC 1829 (Pat).
79. The point made by Floyd J in *Qualcomm* (paragraphs 72 to 74) is that although “for” in a patent claim is normally read as “suitable for” one has to be very cautious of any principle of construction which is said to codify the meaning of particular words. Although this statement was made before the Court of Appeal in *Virgin v Premium* decided that the skilled reader, probably with the benefit of skilled advice, would have in mind explicit drafting conventions, I do not see there being any difference in principle between *Qualcomm* and *Virgin*. While the skilled person will have conventions in mind (*Virgin*) one must nevertheless be cautious about blindly applying a generalised drafting convention to a particular case (*Qualcomm*).

80. Floyd J went on to point out that “suitable for” cannot be taken too far. An apparatus would still normally infringe a product claim even when it was switched off. So a toaster is still a toaster even when it is switched off. Supplying power does not change the nature of the apparatus. However if the apparatus has to undergo physical modification before it can be used, then *prima facie* it is not suitable for that use and will not infringe a claim limited in that way. Here Floyd J was rejecting a submission that “suitable for” was wide enough to be satisfied if the device could be readily modified so as to perform the function.
81. In *Folding Attic Stairs* Mr Prescott QC was dealing with a claim to a process for making a stairway with the words “spaced at a preset distance” in it. He held that these words related to the intention of the manufacturer and referred to the “old prejudice or tradition” in patent law that words of intent should not be used in patent claims. He also referred to the recent developments in second medical use and Swiss style claims which can be said to import intention into patent claims. It seems to me that the *ratio* of Mr Prescott QC’s judgment is that there is no principle or law of construction which prevents a claim from being construed in that way. I agree. Whether a claim should or should not be read that way will depend on the particular case.
82. In *FNM Corporation v Drammock* Arnold J considered the issue of whether “for” means “suitable for” in some depth. He started from the familiar cases of *Adhesive Dry Mounting v Trapp* (1910) 27 RPC 341, *Insituform v Inliner* [1992] RPC 83 and *Coflexip v Stolt Comex Seaway* [2000] EWCA Civ 242, [2000] IP&T 1332 and then considered the different forms of patent claim and the issue of novelty. I respectfully agree with Arnold J that this question of “for” and “suitable for” is tied up with an issue as to the law of novelty, i.e. “whether a claim to an old product for a new use is novel *where the claim is to the product rather than to the use of that product*” (paragraph 58). I also agree with Arnold J that the EPO continues to allow use claims where the only novelty lies in the purpose of the use but not to allow product claims in such circumstances and that this is based on a number of decisions of the EPO Boards of Appeal and the Enlarged Board. Thus the form of the claim makes a difference and it is not correct simply to transfer principles from consideration of the proper scope of use claims to the consideration of product claims. Finally I also agree with Arnold J that the EPO Guidelines bear on this issue. Section C-III paragraph 4.13 of the April 2009 Edition includes a statement that “*If a claim commences with such words as: ‘Apparatus for carrying out the process etc...’ this must be construed as meaning merely apparatus suitable for carrying out the process.*” The paragraph is somewhat less dogmatic further on but the general EPO convention is clear. In a product claim “for” means “suitable for”. The passage from the Guidelines also draws a distinction between the use of “for” in a product claim and in a method claim, which again indicates that the form of claim in question matters.
83. In *Zeno Corporation* Lewison J looked in some detail at the issue of whether “for” means “suitable for”. He analysed the matter from paragraphs 26 to 37. Lewison J had considerable doubts about the issue and regarded the argument for a wider general rule of construction that “for” means “suitable for” as having a slender foundation. He started from *Adhesive Dry Mounting v Trapp* and dealt with the other cases and issues including *Coflexip*, use claims, the *Mobil / Friction Reducing Additive* EPO Enlarged Board decision G2/88 and *Folding Attic Stairs*. However, I

think mainly as a result of *FNM Corporation*, the learned judge decided that despite his own doubts and in view of the common ground to “*assume the emperor is clothed and apply the received wisdom*” that “for” a purpose means “suitable for” that purpose (paragraph 30).

84. One question Lewison J asks is why, since a patent is a unilateral document written in words of the patentee’s choice (echoing the famous expression of Lord Diplock in *Catnic*), the patentee did not write “suitable for” if that is what he meant. I believe that is a question to which there are at least partial answers. First, as Arnold J also explained, interpreting “for” as “suitable for” in a product claim is a clear drafting convention in the EPO. There is no need for patentees to write “suitable for” when the EPO are firm about what “for” means. Second, despite what Lord Diplock said, the drafting of patents is not an entirely unilateral exercise and claims very often are not couched in words a patentee would choose. Professional representatives who draft patents know that part of the job of patent examiners is to apply the various rules and guidelines relating to novelty. They have a profound influence on claim drafting. Moreover the particular rules of added matter, support and clarity place limits on the words a patentee can choose once he is before the patent office. While none of this explains specifically why “suitable for” is not written instead of “for”, it seems to me that this does have a bearing on the matter. For example I rather think a European patent examiner faced with a claim which referred to a product “intended for” performing a given purpose would reject it as lacking clarity under Art 84 EPC and perhaps on other grounds too. There is no case on the point as far as I know, probably because it has never been tried.
85. Lewison J went on to consider the difficulties in determining whether a product was to be regarded as suitable for a particular purpose, citing *Buhler v Satake* [1997] RPC 232 and the same EPO guidelines which were referred to by Arnold J. Despite his doubts the learned judge decided to proceed on the basis that something is suitable for a specified purpose if it is capable of being used for that purpose without modification.
86. Pulling the various cases relied on by Mr Davis together and adding some observations of my own, I can state the following:
- i) There is a clear drafting convention in European patents. In a product claim the words “apparatus for achieving a result” almost always means “suitable for”. The skilled reader would be aware of that convention. In this context “suitable for” means “capable of” or “not incapable of” performing the function. This may give rise to difficult questions of fact but what can be said is that to satisfy such a claim the device must be capable of doing so without modification.
  - ii) The matter of “suitable for” is different when one is considering a use claim or a method claim. For one thing the drafting conventions are different but in any case the considerations themselves differ. For example in a claim to a method of manufacturing an item there may well be a person performing the method to whom an intention can sensibly be attributed (*Folding Attic Stairs*). Words like “preset” or “predetermined” raise different issues from “suitable for”.

- iii) To read intention into any product claim is capable of giving rise to problems. The monopoly associated with a product claim is absolute. There is no reference to intention in the definition of primary infringement. When the law seeks to make the intention of the putative infringer relevant the legislation says so (compare s60(1)(a) and (c) with s60(1)(b) and s60(2) of the 1977 Act). Further, what sort of intention would be required to satisfy a claim construed as “intended for” a given purpose? Does it include recklessness? How is the prior art to be judged against such a claim when one may have no idea what either the maker, seller or user of the prior product intended it for? Many of these problems arise in relation to use claims but they are (so far) confined to that field. At least in the context of medical use claims, which is the primary area in which they arise, the problem is alleviated by the fact that medicines are subject to product licensing legislation which has the intended purpose of the drug written on the label.
  - iv) Finally however, there is no legal principle or canon of construction which actually prevents a claim being read as referring to intention. If that is the correct construction of the claim then so be it.
87. The words in issue are that the gripper-like device is “*constructed to receive*” a plurality of balancing weights. They are part of a product claim. In my judgment no skilled person would think these words were used to refer to the intention of anyone. There is nothing in the specification which would lead a skilled reader to that conclusion. I asked Mr Davis whose intention was relevant. Was it the intention of the designer of the weld block, the weld gun (gripper-like device) or the balancing machine? It is clear that weld guns may be bought more or less off the shelf and so there is no doubt that the person who made the weld gun may have had very different views from the person who designed the balancing machine. Mr Davis submitted it was the intention of the balancing machine designer. I think that would have to be right but it seems to me that it illustrates a difficulty with this point in this case.
88. The phrase in question does not use the word “for” but nevertheless the phrase is clearly a definition of an object by reference to its function or properties. In my judgement it means that the gripper-like device must be constructed in such a way that it is capable of receiving a plurality of weights. It is not a reference to the intention of its designer or anyone else.
89. As for Mr Davis’s four points which arise if his primary case is rejected, I agree that word “constructed” means there has to be some physical construction of the device which achieves the objective but I do not accept that this goes as far as Mr Davis intends. It seems to me that a device with a curved surface onto which can be piled two or three balancing weights has indeed been constructed to receive a plurality of weights. There is a physical construction of the device which achieves the objective – the upwardly directed curved surface. I also agree that, as a whole, the claimed device must work in practice. The skilled person would understand that the device has to be a device for fastening balancing weights. It need not be suitable for use on a production line, but it does need to work. I reject the third point. There is nothing in the claim about the service lifetime of the rotor. A device which works but is not very good will still be a device for fastening weights to rotors.

90. I reject the fourth point. It is true that in the specification, the purpose of the machine carrying a plurality of weights is in order to being able to load them individually on the rotor. That is how the operation of the device is described. However it seems to me that this is an attempt to read words into claim 1 which are not there and narrow the claim by reference to the specification. The purpose is defined adequately by the words in the claim. That purpose is “to receive a plurality of balancing weights”. This is a broader statement of purpose than “to receive a plurality of balancing weights in order to load each one individually on the rotor”. It seems to me this is an example of the use of words of the patentee’s own choosing. When the patentee has clearly chosen to claim broadly, the skilled reader would not have a reason to think the claim should be interpreted narrowly.

*(iii) float (claim 2)*

91. There was an issue about claim 2 and the term “float” in the phrase “two gripper units mounted so as to float relative to each other in the gripper closing direction”. This is described in paragraph 23 of the patent. The property of the gripper units which claim 2 is referring to is that the two arms can move so as to touch the prop shaft without imparting a bending force on the shaft. Whether “float” is an entirely apt word as a matter of English, any skilled person would understand that that is what is being referred to.

*(iv) preferably (in claim 7)*

92. Claim 7 uses the word “preferably”. I am not aware that the point was taken but in any case it seems to me that the claim would be meaningless if “preferably” here was taken to mean that all the language after it was optional. I will interpret claim 7 as if the word was not present.

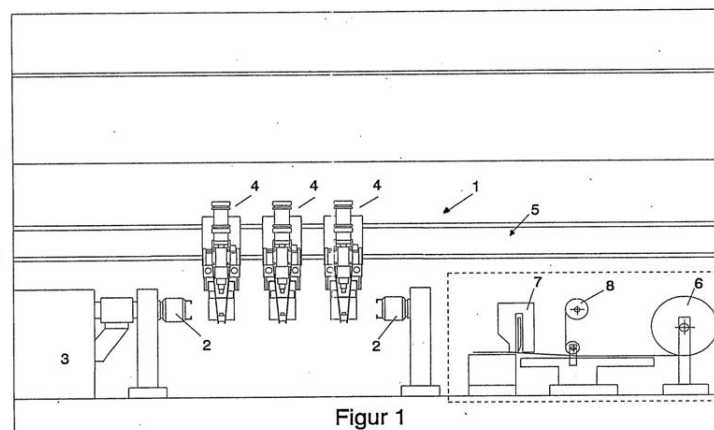
*Novelty*

93. To be valid an invention must be new, which means it must not form part of the state of the art (s1(1)(a) and s2(1) of the 1977 Act). The state of the art includes all matter made available to the public before the priority date (s2(2) of the 1977 Act).
94. The House of Lords in Synthon BV v SmithKline Beecham plc [2005] UKHL 59, [2006] RPC 10, held that for an item of prior art to deprive a claim of novelty, two requirements must be satisfied: disclosure and enablement. First, the prior art must disclose subject matter which, if performed, would necessarily infringe that claim. As it was put by the Court of Appeal in General Tire and Rubber Co v Firestone Tyre and Rubber Co Ltd [1972] RPC 457 at 486, “[t]he prior inventor must be shown to have planted his flag at the precise destination before the patentee”. Second, the prior art must disclose that subject matter sufficiently to enable the skilled addressee to perform it. In this case there was no issue concerning enablement. For each of the various items of prior art relied on the issue is whether something within the claim is disclosed.
95. There are four pleaded items of prior art: the Green Machine, the 1999 Machine, the BMW patent application and the GKN Land Rover Freelander document. Although the GKN Land Rover Freelander document is referred to as part of the defendant’s novelty case, I did not understand it to be suggested that the patent actually lacks

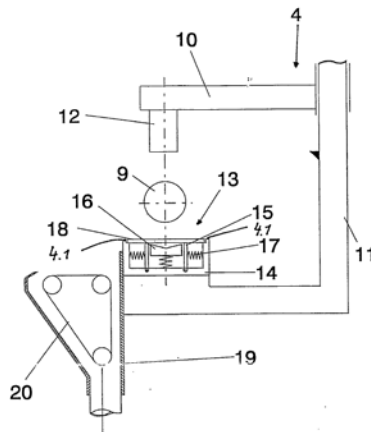
novelty over that document. The issue is that the document bears on the question of stacking weights, which bears on the question of the nature and capabilities of the prior art balancing machines relied on. The allegation of lack of novelty over the Blue Machine was dropped during trial.

*The BMW patent application*

96. The BMW patent application describes a machine for attaching balancing weights to a rotor shaft. It is clearly focussed on attachment of the weights by gluing them onto the rotor as an alternative to welding. That is what the bulk of the disclosure is concerned with. There is a sentence which indicates that either welding or gluing could be used. The sentence is in the first paragraph after the list of figures which starts with the words “Figure 1 shows...”. The sentence surprised Dr Thelen since he had not noticed it. I accept that the document suggests welding as an alternative but I do not see why that matters. The novelty argument is concerned with the machine disclosed in detail in the document, which is a machine which glues weights to the rotor shaft.
97. At the start (col 1, 2<sup>nd</sup> paragraph) the document describes the known procedure for welding a weight onto a drive shaft of a motor vehicle. In the defendant’s closing argument (paragraph 65(a)) it is submitted this section describes that the known welding devices “pick up the balancing weights with one of its electrodes”. This is a minor typographic error. The document actually states that the welding device “picks up the balancing weight with one of its electrodes”. The difference is that as written the BMW application does not in this context refer to the electrode picking up the weights (plural) but to picking up the weight (singular).
98. Figure 1 of the BMW application is as follows:



99. The shaft is mounted between the two bearings marked “2”. Item 3 is an evaluation device to measure the imbalance. Shown in the figure are three “tong like clamping devices” marked 4. Figure 4 (below) shows a tong like device viewed from the side:



Figur 4

100. The shaft is item 9. The surface of the shaft is sanded clean on the belt 20 and then moved into the position shown in fig 4 in order to have a weight glued to it. The weight is placed on top of a rubber mat marked 18. The limbs come together so that the top stop 12 is touching the top side of the shaft and the lower stop 13 is pressing the weight against and around the lower surface of the shaft. The weight is fastened to the shaft.
101. As described so far the BMW patent application discloses all the pre-characterising features A, B and C of claim 1. The issue is feature D.
102. Ms McFarland submitted that the disclosure satisfies feature D because it describes an arrangement whereby the individual weights are cut from a coil. This requires explanation. Figure 1 shows a strip of material rolled up in a coil on a winder (item 6). The material is used to make balancing weights. The strip is unrolled on a bed and the backing foil peeled off at item 8. A blade (item 7) then cuts the strip to the correct length. Thus for a heavier weight a longer length is cut. The cut can be manual or automatic and the machine can transport the cut weight strip automatically too. So the machine can work by measuring the imbalance and determining the weight needed to correct it, automatically cutting an appropriate length of weight strip and automatically put the strip into the tong like clamping devices and fastening the weight to the shaft.
103. As drawn in figure 1 the coil and cutter arrangement is somewhat separate from the tong like clamping devices however Ms McFarland emphasised that the document teaches that the whole thing can be done automatically and that figure 1 is merely exemplary. She submits that the description discloses an arrangement in which the coil can be automatically cooperative with the fastening device. I accept that submission.
104. Ms McFarland submitted that the coil consists of or amounts to a plurality of weights – since many weights can be created from it by cutting off appropriate lengths and so the claim is satisfied. She submits that the claim places “no restriction on how the pluralisation is achieved” (Opening skeleton paragraph 62). There is no limit as to how the weights can be arranged, they could be placed side by side, on top of one another or fed in on a roll or continuous feed basis. I accept that claim 1 does not



restrict the nature of the plurality of weights referred to in feature D. The words of claim 1 are that the “*the gripper-like device is constructed to receive a plurality of balancing weights*”.

105. The argument over the BMW application raises a point on the construction of claim 1. I do not accept that “receive a plurality of weights” means just that the gripper can be given more than one weight over time. After all the well known standard devices can “receive” in the sense of “be given” more than one weight over a period of time. Once a single weight has been welded, another weight can be placed on the same electrode and the operation repeated. No skilled person would read the Schenck patent in that way. “Receive” in claim 1 is referring to the capacity of the gripper-like device to carry a weight. To satisfy the claim the gripper-like device must have the capacity to carry more than one weight at the same time. Whether the two weights are stacked on top of each other or side by side is irrelevant but what is not irrelevant is that it is the *gripper-like device* which must be constructed to receive the plurality, it is not merely the balancing machine in general which must be so constructed.
106. The fact that there could be said to be a coiled up plurality of weights associated with the balancing machine in the BMW application does not mean that feature D is satisfied. A machine which feeds a single weight to the gripper like device does not satisfy that requirement. Nor does it do so just because after one weight has been supplied and fastened on the shaft, the machine can automatically feed another weight from the same plurality onto the gripper-like device. In the BMW machine any given gripper-like device only ever has a single weight at any one time. That is clear from the document and Prof Sheldon’s evidence also was that there was one weight per weld head.
107. I find that claim 1 is novel over the BMW patent application.
108. It was not clear to me whether Universal Balancing contended that the BMW patent application deprived claim 9 of novelty. In my judgment it does not. The first part of the claim calls for a “method for fastening balancing weights to rotors by means of a gripper like device wherein a plurality of balancing weights are arranged thereon”. This plainly requires the plurality of balancing weights to be arranged on a gripper like device. Even if the coil in the BMW patent application is a plurality of weights, the plurality is not arranged on the gripper like device and claim 9 is not anticipated.

### *The Green Machine*

109. The Green Machine was supplied by Universal Balancing to GKN in 2001. It was supplied in order for GKN to use it to weld weights onto the Land Rover Freelander drive shafts. There is no dispute that this supply made the machine available to the public.
110. The Green Machine is a drive shaft balancing machine with a single weld gun. It works in the following way. A drive shaft is mounted in the machine between the bearings. The machine spins it and measures the imbalance. The operator selects the appropriate weight and puts it in position. The weld gun welds the weight onto the rotor. The weld gun in the Green Machine is fixed in the Y axis. In other words it cannot be moved towards or away from the operator whether manually or by hand. The weld gun can be moved in the X axis by hand. So an operator can move the weld

gun sideways along a shaft in order to weld at different compensation planes. There was no suggestion that the Green Machine performed auto-indexing. The operator has to turn the shaft manually to locate the correct spot on the periphery on which to weld the weight.

111. Thus the Green Machine satisfies features A and B of claim 1 in general terms but there is a point below about feature A in the context of stacking.
112. In evidence are two video clips of the operation of the Green Machine. One video taken in 2011 for this case shows the weld gun fitted out as a spot welding system. A diagram of spot welding which essentially corresponds to the 2011 configuration of the Green Machine is above in the section on common general knowledge. In the Green Machine the weight shown on top of the shaft in the diagram is placed there by hand by the operator.
113. By the end of the trial there was no dispute that this spot welding configuration did not fall within claim 1 since it did not satisfy feature C. The claim requires that the device is such that the weight can be placed on the outer periphery of the rotor and fastened there. There is a double requirement – placing and fastening. The 2011 spot welding configuration clearly satisfies the second requirement (fastening) but Ms McFarland accepted that the 2011 spot welding configuration did not satisfy the first requirement (placing). It is not the machine which places the weight on the rotor, it is the operator.
114. Thus if the Green Machine in 2001 was configured as in 2011, the claim would be novel.
115. There is a video of the Green Machine from 2001. Not much is visible from the video. However it is tolerably clear from the video that the spot welding configuration visible in 2011 is not how the weld gun was set up in 2001. The operator can be seen to place the weight on a lower electrode whereas with the spot welding configuration the weight is placed on top of the shaft.
116. Mr Davis maintained that the evidence about the precise configuration of the Green Machine was vague. I agree. However by closing the position was tolerably clear. I find on the balance of probabilities that as supplied in 2001 the weld gun in the Green Machine was not set up for spot welding, it was configured for projection welding as per the diagram in the common general knowledge section.
117. It was clear that changing a weld gun from being a projection welding arrangement to a spot welding arrangement was a fairly routine matter. No evidence was drawn to my attention which explained when the change from projection to spot welding took place.
118. In the projection welding configuration the Green Machine had a single lower electrode. The operator places the weight on the lower electrode and the machine then places the weight on the periphery of the rotor by moving the electrode upwards in order to perform the weld. Accordingly feature C of claim 1 is satisfied.
119. The real issue concerns feature D of claim 1. It is plain that the Green Machine could operate perfectly well with the operator placing a single weight on the lower

electrode. In that arrangement there is no plurality of weights present and no question of the machine satisfying feature D. However Universal Balancing's case is that the Green Machine could also be operated by stacking a pair of weights, one on top of the other, on the lower electrode. In other words by what I have called all-at-once stacking. On this basis the weld gun (i.e. the gripper like device in the words of claim 1) can be said to be "constructed to receive a plurality of balancing weights".

120. I have held that the lower electrode in the 2001 Green Machine is like the one in the projection welding diagram. It is obviously possible to place two weights on that lower electrode, one on top of the other. However whether it is physically possible to place two weights in that position is not the only question. First Schenck's case is that feature D is not satisfied, even though the stack can be placed in position because the machine (or weld gun) is not "constructed" to receive a plurality of weights. Second Schenck's case is that even if it can be said that this proves that the weld gun itself is "constructed to receive" the plurality, for anticipation the end result still has to be a machine that works. Schenck argues that stacked in this way the machine could not weld the pair onto the drive shaft. On that basis either feature D is not satisfied or the argument could be put that feature A is not satisfied. Either way the claim does not lack novelty. Third Schenck does not accept that this kind of stacking was actually done at GKN at all (whether on the Green Machine or any other machine). Universal Balancing argues that the Land Rover Freelander document shows that this sort of stacking was done.
121. I reject the first point. The lower receiver was constructed with a shallow curving face. That face is capable of receiving a stack of two weights, one on top of the other.
122. As for the third point, I have addressed this already to some extent in relation to common general knowledge. Mr Tinsley's evidence was that the Green Machine had been built for the purpose of balancing the Land Rover Freelander drive shafts as per the GKN Land Rover Freelander drawing. So Universal Balancing's case was that since stacking is shown in the drawing, that proves that the Green Machine was used for stacking and so, since the Green Machine was originally a projection welding system, stacking must have been done by projection welding in the Green Machine.
123. I am not satisfied that the Green Machine in its projection welding configuration was used to perform all-at-once stacking. The evidence is simply too vague and unspecific to make that good. For all I know the Green Machine was reconfigured to work by spot welding at an early stage and all-at-once stacking (if it was actually done with that particular machine) was performed in that way. Equally perhaps the device was left in a projection welding form and was used for sequential stacking. Neither option is relevant to Universal Balancing's attack on the novelty of claim 1. The GKN Land Rover Freelander document shows that stacks were made but it does not prove how they were made. Prof Sheldon gave some evidence about a 64kVA power source but it was unspecific and in any event I am not prepared to put weight on Prof Sheldon's views about welding.
124. Nevertheless what about the second point? Even if there is no proper evidence the Green Machine was actually used that way, was it capable of welding all-at-once a stack of weights by projection welding? If so then claim 1 would lack novelty. Clearly two weights could be put on the lower electrode of the Green Machine and in use the machine would then place the stack against the rotor and the weld gun would

trigger. What would happen then? I am not satisfied that the unmodified machine would work, in other words would produce what any skilled person would regard as a welded stack of two weights on the drive shaft. Dr Thelen gave convincing technical reasons why projection welding did not achieve this result. I accept them.

125. The Green machine does not anticipate claim 1.
126. Clearly the Green Machine cannot anticipate claim 7 since that claim calls for receivers for balancing weights located one behind the other etc. There is only one receiver (lower weld block) in the Green Machine.
127. The Green Machine does not deprive claim 9 either. The argument over claim 9 is that when performing all-at-once stacking when configured for projection welding the Green Machine will perform a method of claim 9. However I have found that the Green Machine was not operated in that way and so claim 9 is novel on any view.

*The 1999 Machine*

128. What has been called the 1999 Machine is a balancing machine which was built by Schenck and supplied to GKN in about 1999. There is no doubt about that.
129. In its general configuration the machine is the same as the other machines in this case. A drive shaft is placed into the machine and the imbalance is measured. The operator then places the weights required onto the weld blocks of the weld guns. It is a projection welding system. The 1999 machine had three weld guns. The operator could add all the balancing weights necessary to the weld blocks in one go and then press the start button and the cycle of welding weights to the pre-determined points would be automatically completed. The 1999 performed auto-indexing. Upon completion of the welding and balancing operation the weld guns would retract automatically towards the rear of the machine (i.e. in the Y axis). This facilitated easy removal of the balanced drive shaft.
130. The weld guns could be moved manually along the entire length of the shaft (i.e. in the X axis). They could also move automatically about 5cm in the X axis. This 5cm movement was for the purposes of trim balancing. Trim balancing is an operation whereby after the initial weight has been welded in position and the drive shaft retested, it is found that a further small weight is needed at a slightly offset position along the X axis close to the original weight in order to balance the rotor.
131. Universal Balancing's case was that the 1999 Machine had also been intended to be used to balance the drive shafts to which the GKN Land Rover Freelander drawing related. I understood a passage of Mr Buschbeck's cross-examination to indicate that although he did not know this at the time, he had recently found out that this was indeed correct. I find for Universal Balancing on this point.
132. However the novelty argument over the 1999 Machine adds nothing to the argument over the Green Machine. In both cases the argument is that their capacity to perform all-at-once stacking means that the claims are invalid. I reject that. The lower electrode is "constructed to receive" a plurality of weights just like the lower electrode of the Green Machine. However I am not satisfied the 1999 Machine was ever in fact used with projection welding to stack weights all-at-once. Nor am I

satisfied that the 1999 Machine unmodified would work with two weights on the lower electrode.

133. I find that the claims are novel over all the cited prior art.

*Inventive Step*

134. Section 3 of the Patents Act 1977 Act provides that an invention shall be taken to involve an inventive step if it is not obvious to a person skilled in the art having regard to any matter which forms part of the state of the art by virtue of s2(2) of the 1977 Act. A structured approach to the assessment of obviousness was set out by the Court of Appeal in *Windsurfing International Inc v Tabur Marine* [1985] RPC 59 and was adjusted somewhat by Jacob LJ in *Pozzoli v BDMO* [2007] EWCA Civ 588, [2007] FSR 37. It is:

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

135. The person skilled in the art, and the common general knowledge, have been identified above.

136. I can approach the matter by considering the 1999 Machine as the starting point. There is no separate argument over the GKN Land Rover Freelander drawing itself. I will take the drawing into account in relation to the 1999 Machine. If the argument over the 1999 Machine does not succeed, the case over the Green Machine is no better. There is no obviousness argument over the BMW patent.

137. There are two separate obviousness arguments relating to claim 1, one concerned with stacking and the other about putting a second weld block at the lower arm of the weld gun.

138. The first argument is that all-at-once stacking was obvious. For this argument the gap between the 1999 Machine and the claim is that the 1999 Machine unmodified will not work welding two weights at once.

139. This is where the GKN Land Rover Freelander document comes in. Universal Balancing submits that since it clearly shows a stack of weights, any skilled person would have tried stacking with a balancing machine, in this case the 1999 Machine. I

accept that a skilled person with the 1999 Machine would have stacking of weights in mind. After all in general terms it was common general knowledge.

140. Universal Balancing submits that:

- i) In the light of the GKN Land Rover Freelander document it would have been inevitable that the skilled person would have tried to stack. Since they are manufacturer's instructions, the skilled person has no choice but to follow them.
- ii) Stacking had been tried at Schenck – as Dr Thelen acknowledged.
- iii) Mr Tinsley had tried an approach which would fall within the patent in GKN's machine shop
- iv) The suggestion that stacking is difficult, e.g. the argument about the radii of weights, is not enough to prevent someone trying. Moreover the GKN Land Rover Freelander document, which shows stacked weights, proves that the differences in radii are so small as to be immaterial.
- v) The projections on projection weights make them particularly suitable for stacking.
- vi) Projection weights are also useful generally because they are fairly good at self-centring.

141. As to these points:

- i) I accept point (i). The evidence was clear that the manufacturer's instructions are paramount. However while the GKN Land Rover Freelander does indeed show that weights can be stacked, it does not mandate that they must be created by all-at-once stacking as opposed to sequential stacking, nor does it say anything about the welding technique to be used (spot welding or projection welding etc.).
- ii) I accept point (ii).
- iii) Point (iii) is irrelevant. What Mr Tinsley described as having happened in the GKN machine shop was not about stacking but related to the second obviousness argument (below).
- iv) As for point (iv), I have accepted the GKN Land Rover Freelander document shows that weights can be stacked and that disposes of the radii point but it does not grapple with the projection welding / spot welding issue.
- v) I reject point (v). In the common general knowledge section I have accepted Dr Thelen's concern about the interaction between the projections of the lower weight and the recesses in the upper weight leading to a totally unreliable weld.
- vi) I accept point (vi).

142. For the claim to lack inventive step, it must have been obvious to a skilled person with the 1999 Machine (and I will assume the GKN Land Rover Freelander drawing) to perform all-at-once stacking with the machine configured for projection welding. I reject that. Although the skilled person knows that projection weights are useful, the skilled person would regard all-at-once stacking with a projection welding machine as problematic. They would know that all-at-once stacking could be performed by spot welding instead. Sequential stacking with a projection welding system would be able to create the stacks shown in the manufacturer's instructions. It was not obvious to embark on trying to make a balancing machine work with a projection weld gun by all-at-once stacking. Furthermore even if a skilled person wanted to try this, I am not satisfied they could produce a projection welding machine which performed this task without inventive effort (or even at all). That disposes of Universal Balancing's first argument.
143. The second argument is nothing to do with stacking. Universal Balancing contends it was obvious to put a second weld block on the lower arm of the weld gun. Steve Fowler showed how easily two blocks could be slid onto the lower portion of the weld gun on the 1999 Machine. The blocks are 40mm wide and the lower portion is 80mm long and so the argument goes, there is enough room for two.
144. Clearly with two weld blocks in this position the machine would satisfy feature D since the gripper-like device would now be able to receive a plurality of balancing weights. However is that modification enough to satisfy claim 1? As it stands the 1999 Machine was designed to work with the lower weld block in a specific location, directly under the axis of the rotor and under the upper weld block. If two blocks are put in side by side, neither of them would be in the right place. Moreover Schenck pointed out that the space at the lower portion was limited so that if two blocks were put there, they would be hanging off opposite ends of the lower portion and neither would be securely fixed. There were arguments about hydraulics and the capacity of the 1999 Machine as it stood to accommodate this arrangement either manually or automatically.
145. I do not regard any of these points as significant for the following reason. At best these points show that in a factory setting a user of the 1999 Machine might have difficulties simply putting two weld blocks on the machine and expecting it to work. However the skilled person is an engineer concerned with designing and making balancing machines, not user of the 1999 Machine. I am quite sure that a balancing machine intended to operate with two weld blocks at the lower portion would be easy to design from the point of view of the skilled person. There may be some details necessary to address movement in the Y axis in order to bring either lower weld block into position and somehow or other the top electrode has to either stay in place when the lower ones move (like Fig 3 of the patent) or there needs to be some other arrangement (e.g. Fig 4). None of this would be difficult or require an inventive step if the skilled person had decided to produce a machine with two side by side blocks at the lower arm. The issue is whether it was obvious to do that in the first place.
146. Universal Balancing relied on Mr Tinsley's evidence. He explained that the use of one weld block was not a particularly new idea in 2002 and he had been operating something similar for many years within GKN's sample shop. In this context the same balancing machine had to handle propshafts of varying diameters. Each diameter needs a different weld block. The welding was done manually and so at

GKN a sliding block was fitted to the base plate of the weld gun. Different weld block sizes would then be added to the sliding block, allowing the appropriate size to be easily selected for each diameter of propshaft. Mr Tinsley said that you did not have to be a genius to see that an automated process using multiple weld blocks could be set up on a production line machine if required.

147. There was no suggestion that this special arrangement at GKN was itself prior art and Universal Balancing did not plead it as such nor was there any suggestion it was common general knowledge. To my mind the significance of this piece of evidence is that it shows that without hindsight someone working with balancing machines had the idea of putting two weld blocks in a balancing machine. However it does not answer the question of whether it was obvious or not. Similar inventions are often made by people working independently. It does not mean they are obvious.
148. I am not satisfied that it was obvious to produce a machine with two lower weld blocks side by side starting from the 1999 Machine. I am not satisfied that the skilled person had a reason to think of it. There was no proper evidence about this. Mr Fowler's beguiling demonstration that it is simple to put in another block does not grapple with why a skilled person would think of it. The people working in Mr Tinsley's workshop were in a special position and there was no suggestion that their position reflected the position of the skilled person. As I address below, the KISS-234 machine has a second lower weld block for vector splitting. I am not satisfied it was obvious to do this for that purpose.
149. I find that claim 1 is not obvious.
150. Claim 7 would not have been obvious even if the first argument (stacking) was accepted because it requires two receivers located at the lower portion. If the second argument against claim 1 had succeeded I doubt there was anything significant in claim 7. There was an argument that claim 9 would have fallen with claim 1 on the stacking point but I do not need to resolve that. If claim 1 is valid, so is claim 9.

#### *Amendment*

151. The unamended claims are valid. There is no need to consider the amendments.

#### *Infringement*

152. In order to address infringement it is necessary to determine the nature of the KISS-234 machine which is alleged to infringe and to compare it to the relevant claims.

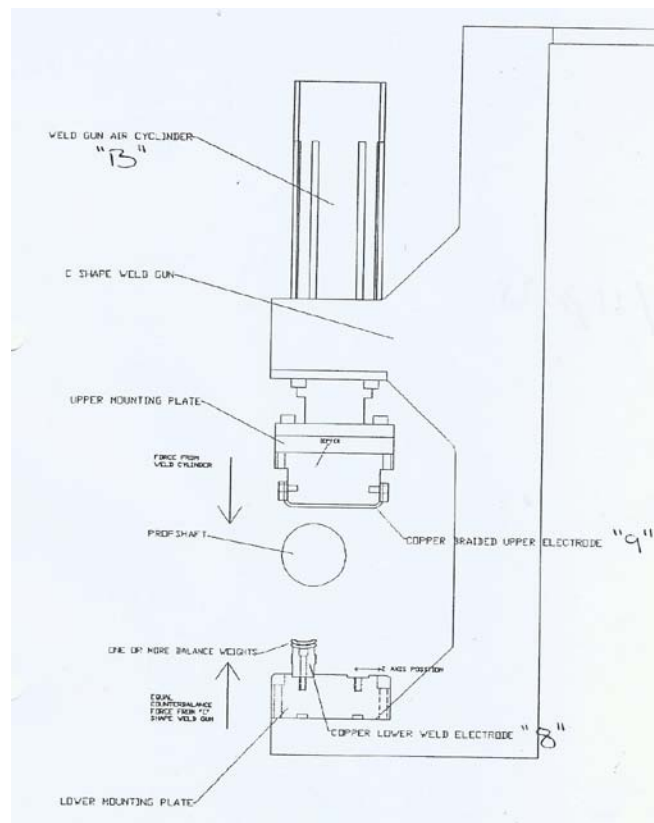
#### *The KISS-234 machine*

153. Steve Fowler's evidence was that in about March 2004 Universal Balancing started using the name "KISS-234" as a model or brand name for machines that they made. He explained that prior to this Universal Balancing's machines were simply referred to by their product number. The word KISS was chosen as a reference to the well known expression "keep it simple stupid" and was, as Mr Fowler put it, "a bit of a sexy name". The digits 234 referred to the number of correction planes in which the machine could operate (2, 3 or 4). I accept this evidence.



154. Mr Fowler also gave evidence that the branding KISS-234 was just a name and was chosen to highlight a type of machine that was already present and not an indication of any design innovation or new product design. He was cross-examined about this and various marketing documents were put to him which were designed to show that the KISS-234 was sold as a new machine or the like. In my judgment the opinion Mr Fowler expressed, which is essentially that there is nothing new or inventive in the KISS-234, is one he genuinely and honestly holds. The fact there are marketing documents which seek to emphasise features of Universal Balancing's products does not undermine his opinion. Mr Fowler's opinion explains much of the stance of Universal Balancing in this case. On the basis of Mr Fowler's views, he does not see how a patent could prevent his company from doing what he regards as old or obvious, and he does not understand why Universal Balancing should have had any inkling that Schenck had a patent covering any aspect of Universal Balancing's products. However none of this is relevant to the objective question of whether the KISS-234 infringes the patent.
155. Mr Fowler also explained that today Universal Balancing no longer use the KISS-234 brand. I have no reason to doubt that. I will address infringement by reference to the machine called the KISS-234 in these proceedings. Obviously the question of infringement does not depend on what name is used for the balancing machine in question. It depends on the characteristics of the machine.
156. The KISS-234 with which this case is concerned is a balancing machine for correcting the imbalance in rotary parts such as axles and drive shafts in one or more correction planes. Like all the other machines in this case, essentially it consists of a machine bed on which bearings are mounted to carry and rotate a shaft. Also on the bed is a gantry carrying weld guns. Part of the machine includes a balancing instrument which can rotate the shaft, measure the vibrations and perform calculations to work out what weights need to be welded at the various compensation planes and at what angular position around the circumference. The weld guns on a gantry are located behind the shaft axis such that the guns can move in the Y axis to bring the electrodes above the axis of the shaft. The machine usually has four weld guns. They can all be positioned along the X axis either manually or automatically. The weld guns are fabricated from a C shaped piece of steel. The upper and lower electrodes are made of copper. They operate by closing the top and bottom jaws around the shaft to bring the electrodes into contact and perform the weld operation. The weld guns can operate by spot welding or projection welding
157. In summary the way the machine is used is as follows:
- i) The machine is turned on and a prop shaft loaded on the bearings.
  - ii) The machine runs, spinning the shaft and takes a set of readings to calculate the imbalance and stops.
  - iii) The machine displays the imbalance on a screen.
  - iv) The operator selects appropriate balance weights (as indicated on the display) and puts them on the lower weld electrodes.

- v) The balance weights are welded on to the periphery of the prop shaft to correct the imbalance in each plane.
  - vi) The shaft is rotated again to measure the imbalance again and check that correction has been achieved.
  - vii) The shaft can now be unloaded.
158. The steps above can be conducted either manually or automatically under the control of the computer.
159. A diagram of one of the weld guns in a KISS-234 unit, which forms Appendix 2 to Universal Balancing's Further Product Description, is below:



160. The diagram shows a single upper electrode marked "Copper braided upper electrode 9". At the lower arm of the unit there is a mounting plate. The diagram shows a single "copper lower weld electrode" mounted on the left side of the lower mounting plate. The lower weld electrode has a curved upper surface. On the mounting plate, the top surface has a pair of holes running vertically downwards. The holes are used to mount copper weld electrodes and so the single lower weld electrode shown in the diagram fits over the left hand hole. The right hand hole is empty but it is there to accommodate a second lower weld electrode. In the diagram an arrow above the right hand hole is labelled referring to the "Z axis" running horizontally. That is not in accordance with the convention adopted in the proceedings generally and in this judgment. In this judgment that axis is referred to as the Y axis.
161. The diagram depicts two weights resting on the upper surface of the lower weld electrode beside the words "one or more balance weights". The KISS-234 machine is

not necessarily used in practice by putting more than one weight on the same electrode. Moreover Schenck's infringement case is not concerned with that mode of operation. Although the diagram depicts only a single lower electrode it is not in dispute that two lower electrodes can be put in place situated next to each other on the lower arm of the weld gun. That use of two lower electrodes is the basis of Schenck's infringement case.

162. The weld guns are able to move in the Y axis to facilitate the use of either lower electrode situated in this way. Given that the axis of the prop shaft is fixed, the weld gun has to move in the Y axis to allow welding using either electrode. One context in which two lower electrodes in the KISS-234 are used is to perform vector splitting. If the vector splitting option is selected by the operator, instead of calculating the mass and position of a single weight to correct the imbalance measured in a given correction plane, the computer in the KISS-234 will calculate the mass and positions of the two weights to be located to correct the imbalance by vector splitting. The operator then loads two weights, one in each of the two lower electrodes. The machine will then locate the first lower electrode in position to weld the first weight. Once that has been welded the machine moves the weld gun to locate the second lower electrode, which will be carrying the other of the pair of weights, under the rotor. The rotor will also be rotated somewhat to present the correct spot on the surface for the second weight. Then the second weight is welded. The end result is that two weights have been welded at the same correction plane in order to correct the imbalance by vector splitting.
163. It was not clear whether the two lower electrodes in the KISS-234 were used for anything other than vector splitting. Mr Davis suggested that the two electrodes could be used to attach two weights side by side, separated by a small distance along the X axis. No evidence was adduced on the matter and I will not decide the point.
164. During vector splitting, after the weld gun has fired the first time, the upper and lower electrodes separate. There is also movement in the Y axis in order to bring the second lower electrode into line with the prop shaft and the welding process is repeated. This much is common ground. However there is a point about the Y axis movement to bring the second electrode into position. Universal Balancing produced a Further Product Description. In paragraph 14 it reads as though only the lower electrodes move and the upper electrode does not move. I understood the position by the closing speeches to be different. I understood it to be accepted by the defendant that in this context both upper and lower electrodes move in a similar way.
165. The significance of the difference is that, as written, paragraph 14 would mean that the place at which the upper electrode engages the prop shaft when the second lower electrode engages the prop shaft is the same in both cases. In other words whichever of the two lower electrodes is engaging with the prop shaft, the prop shaft touches the same point on the upper electrode. Whereas what I believe to happen is that there are two places at which the upper electrode engages the prop shaft, depending on which of the lower electrodes is engaged. As I say I understood the latter explanation to be accepted. In any event I believe it is consistent with the diagram shown above which comes from the Further Product Description. I find that that is how the KISS-234 works.

166. The diagram shows that the upper electrode extends in the Y axis direction, obviously in order to accommodate the prop shaft touching at different places corresponding to the two different lower electrodes. Moreover although the upper electrode in the KISS-234 as sold had a single upper electrode coated with copper braid (also shown in the drawing above) at one time Universal Balancing tried a system in which the upper jaw of the weld gun had two curved electrodes side by side which were obviously meant to correspond to the lower pair of electrodes and could only work if the upper part also moved in the Y axis.
167. The weld guns are counterbalanced in the Z axis. When a weld is to be created, the upper weld electrode moves downwards and touches the prop shaft but the force put on the prop shaft is equally counterbalanced by a pneumatic cylinder. Then the lower electrode rises upwards to contact the underside of the prop shaft. The result is that the weld electrodes can squeeze the shaft to exert pressure which assists in the welding process but in doing so avoids exerting a bending force on the prop shaft.

*Comparison between the KISS-234 and the patent claims*

168. The KISS-234 is alleged to infringe claims 1, 7 and 9 of the patent as granted and claims 1, 7 and 9 as amended.
169. By the closing the points in relation to claim 1 were narrow. The KISS-234 is clearly a balancing machine which is for fastening balancing weights to rotors comprising a plurality of compensation planes, in particular to propeller shafts or cardan shafts (feature A). The weld guns can be positioned on the X axis (feature B2). I think it was accepted that the weld guns in the KISS-234 were “gripper-like” devices (feature B1) but in any event I so hold.
170. The balancing weights are placed by the operator on the lower electrode and then, when a weld is to be performed, the lower electrode rises in the Z axis and places the weight on the outer periphery of the rotor. The weight is fastened there by the welding operation. Thus features C1 and C2 are satisfied.
171. As regards feature D, clearly when two lower electrodes are fitted to a weld gun in the KISS-234, the “gripper-like” device can properly be said to be “constructed to receive a plurality of balancing weights”.
172. Thus the KISS-234 infringes claim 1.
173. To be a product within claim 7 the KISS-234 must satisfy claims 1, 2 and 7.
174. Claim 2 requires the gripper-like device to have two gripper units “*mounted so as to float relative to each other in the gripper closing direction*”. The claim continues by stating “*the units being jointly movable until they abut with one gripper unit on the rotor and the other gripper unit can be placed on the rotor by relative displacement with respect to the first gripper unit*”. I find that the second feature (jointly moveable until they abut with one gripper unit on the rotor etc.) is satisfied. The real issue concerns “floating”. Universal Balancing does not accept that in a weld gun in the KISS-234, the two arms float relative to each other. I find that this feature is satisfied by the KISS-234. The property of the “gripper units” which the claim is referring to

is that the two arms can move so as to touch the prop shaft without imparting a bending force on the shaft. It is clear that the KISS-234 weld guns do this.

175. Claim 7 requires that the “*lower gripper unit comprises receivers for balancing weights which are located one behind the other transversely to the longitudinal direction of the rotor*”. This is clearly satisfied by the KISS-234 when it is fitted with two lower electrodes.
176. Claim 7 then requires that “*with which receivers in the gripper closing direction respective counter elements are associated in a corresponding number to the other gripper unit*”. It is clear that this language would be understood as including the embodiment in the Schenck patent shown in figure 4 (above).
177. In that figure it can be seen that for each of the lower electrodes there is a distinct upper electrode. Thus each “receiver” (curved lower electrode) has a “respective counter element” (upper flat electrode) and the respective counter elements “are associated in a corresponding number to the other gripper unit”. There are three at the bottom and three at the top. In the patent this can be distinguished from figure 3 in which there is the same arrangement of lower electrodes but a single upper electrode. In fig 3, the upper electrode stays in place above the shaft while the lower arm moves to bring a different lower electrode into position.
178. As I have mentioned above, at one time Universal Balancing did produce a version of the KISS-234 with two distinct curved upper electrodes which corresponded to the two distinct curved lower electrodes but as I understood Mr Fowler’s evidence this was an experimental device. It is not clear whether it was actually sold. That device would clearly have satisfied claim 7.
179. The real issue is whether the version of the KISS-234 with a single braided copper upper electrode satisfies claim 7. The problem of course is that the braided copper electrode is a single unit and so, at least at first sight, it is hard to see how the top arm has a corresponding number of counter elements to the elements at the bottom arm. There is one at the top and there are two at the bottom.
180. At one stage it appeared that Mr Davis contemplated arguing that even if the KISS-234 did not satisfy the claim as a matter of construction, it still infringed because it was an immaterial variant or equivalent, however he disavowed any argument over and above one based on purposive construction of the claims. His case was that equivalents play a part in construction (see Art 2 of the Protocol) and so the claim should be construed in such a way that the KISS-234 infringed claim 7. At one point when I asked Mr Davis what construction I should put on the words in claim 7 in this respect he stated that his case was that the feature “*respective counter elements are associated in a corresponding number*” could be satisfied by a single unitary element. While that is a fair summary of his case, I do not regard it as a construction of claim 7. It is a statement of a legal conclusion. I understand the task of claim construction to involve arriving at an understanding of what the words in the claim actually mean.
181. It seems to me that as a matter of construction of claim 7, with this issue in mind, a number of points arise. First, as Mr Davis pointed out, the word “separate” is not there. The claim clearly contemplates that the counter elements can be enumerated but it does not expressly require the counter elements to be separated from each other.

Second Mr Davis submitted that the claim would be satisfied provided that there was a corresponding number of weld contact points at the upper part of the weld gun. It seems to me that for this to be correct a weld contact point would need to be regarded as the counter element referred to in claim 7. It is therefore necessary to ask what is meant by a counter element.

182. Before considering that point I should mention Ms McFarland's submission in reply. She relied on the reference numerals in claim 7, which I have so far ignored. With reference numerals in place, claim 7 reads:

“Device according to claim 2 characterised in that preferably the lower gripper unit (7) comprises receivers (7a, 7b, 7c) for balancing weights which are located one behind the other transversely to the longitudinal direction of the rotor with which receivers in the gripper closing direction respective counter elements (6a, 6b, 6c) are associated in a corresponding number to the other gripper unit (6).”

183. The submission was that with the reference numerals in mind one could not interpret the claim as allowing for a single counter element. However in *Virgin v Premium* (supra) the Court of Appeal decided that reference numerals should not influence construction at all, bearing in mind the provisions of Rule 29(7) of the Implementing Regulations to the EPC. I therefore reject Ms McFarland's submission about reference numerals. In any event however it seems to me that irrespective of the reference numerals in claim 7, it is clear that the claim requires the same number of counter elements as there are receivers. In other words if there are two receivers there must be two counter elements. It cannot be construed otherwise in my judgment. However that does not answer the question of what a counter element actually is.
184. In the specification of the patent the term counter element is used to refer to the upper electrodes in figure 4 so that in that figure there are three counter elements on the upper gripper unit. The document never mentions the idea of replacing the three counter elements in figure 4 with a single block covering the same expanse. In figure 3, with only a single upper electrode, the term “counter element” is not used. The upper electrode is simply referred to as the upper gripper unit.
185. The skilled reader would understand the purpose of the “counter element” to be to provide a place opposite the lower receiver which will abut the rotor when the upper and lower units are moved in the Y axis to locate them above and below the rotor axis (see e.g. patent paragraphs 10 and 13). The function of the counter elements is to abut the rotor and be the counterpart of the lower receiver. To achieve its purpose the counter element must have a surface which abuts the rotor and which is placed above the receiver. It seems to me that if one posed the question to a skilled person whether the counter elements needed to be separate pieces of metal from each other, the skilled person would respond that there was no reason why they needed to be separate pieces of metal provided they were distinct from each other.
186. I conclude that construed purposively a counter element within the meaning of claim 7 is simply an expanse of material against which the rotor abuts when the jaws of the gripper-like device close. It must be possible to count such elements and there must be the same number of counter elements as there are receivers at the lower unit, but there is no requirement that each counter element must consist of a separate piece of metal. They must be distinct but they need not be separate.

187. On that basis I find that the KISS-234, with its upper copper braided electrode, satisfies claim 7. The rotor abuts two different points on the copper braid depending on whether the weld gun is positioned to weld using a weight on one lower electrode or the other. The two points at which the rotor abuts the copper braid are “*respective counter elements*” and they are “*associated in a corresponding number*” with the two receivers.

*Claim 9*

188. A point arose on infringement of claim 9. It is a point of construction but one which is best understood in the context of infringement. The relevant mode of operation of the KISS-234 from the point of view of this case is vector splitting. When it is operating that way, the two weights, each on one of the two lower electrodes, are placed on the rotor in the same compensation plane. They are located at different positions around the circumference of the rotor (see the diagram of vector splitting in the common general knowledge section above). Claim 9 requires that “a selected weight is placed on the balancing point at the periphery of the rotor and fastened there”. Universal Balancing submitted there was no infringement because the patent was concerned with balancing rotors comprising a plurality of planes only. In effect the argument is that “balancing point” means compensation plane and so claim 9 is contemplating placing one weight at one compensation plane. Although the claim does not then spell it out, the point is that the next selected weight in the plurality referred to in claim 9 would be placed at a second compensation plane. There is some support for that argument since the description in the patent is concerned with placing weights in different compensation planes and does not describe vector splitting. However I think “balancing point” would be understood simply to mean the point where the balancing weight has to be placed in order to do its job. On that basis the KISS-234 infringes claim 9 when performing vector splitting.

*Infringement under s60(2)*

189. In addition to their case on infringement under s60(1) of the 1977 Act, Schenck has a case of infringement under s60(2). Schenck contends that the supply or offer to supply of the KISS-234 “*regardless of whether or not the vector splitting software functionality is activated and/or regardless of whether or not the apparatus is supplied with plural receivers each for a balancing weight*” constitutes the supply / offer to supply of the means relating to an essential element for putting the invention claimed in the various claims addressed above into effect. There are also knowledge requirements in s60(2) but I did not understand Universal Balancing to deny that those requirements were satisfied in this case. After all Universal Balancing know how the machine works and no doubt intend their customers to use it appropriately.
190. The KISS-234 is supplied with vector splitting software installed in it and the software is there to be used as an option. As can be seen from the drawing taken from Appendix 2 to the Further Product Description which is reproduced above, the weld guns in the KISS-234 have a lower mounting plate which has holes in it to accommodate two lower electrodes. Only a single lower electrode is shown in Appendix 2 but the holes can clearly be seen. It seems to me that if supplied with the vector splitting software loaded into it and accessible to a user, and with the lower mounting plate I have described, the device will be a means relating to an essential element for putting the invention claimed in all the various claims addressed above

into effect. That will be so even if no lower electrodes are actually in place at the time. On that basis the case under s60(2) is made out.

191. Questions might arise about whether supply of the KISS-234 machine in other configurations falls within s60(2) but they were not explored in evidence or argument.

*Defence under Section 64*

192. Universal Balancing contended that even if the KISS-234 infringed a valid claim of the patent, it had the benefit of a defence under Section 64 of the 1977 Act. That section provides as follows:

64.— Right to continue use begun before priority date.

(1) Where a patent is granted for an invention, a person who in the United Kingdom before the priority date of the invention—

(a) does in good faith an act which would constitute an infringement of the patent if it were in force, or

(b) makes in good faith effective and serious preparations to do such an act,

has the right to continue to do the act or, as the case may be, to do the act, notwithstanding the grant of the patent; but this right does not extend to granting a licence to another person to do the act.

(2) If the act was done, or the preparations were made, in the course of a business, the person entitled to the right conferred by subsection (1) may—

(a) authorise the doing of that act by any partners of his for the time being in that business, and

(b) assign that right, or transmit it on death (or in the case of a body corporate on its dissolution), to any person who acquires that part of the business in the course of which the act was done or the preparations were made.

(3) Where a product is disposed of to another in exercise of the rights conferred by subsection (1) or (2), that other and any person claiming through him may deal with the product in the same way as if it had been disposed of by the registered proprietor of the patent.

193. If the relevant criteria are satisfied, this provision provides a defence to patent infringement.

194. Mr Davis submitted that s64 was contrary to the Directive 2004/48/EC on the Enforcement of Intellectual Property Rights and had been impliedly repealed by the secondary legislation which was passed in the light of the Directive (SI 2006/1028). He did not elaborate this submission in any detail. In my judgment it is wrong.



Doubts have been raised as to whether the section is compliant with European Union law (see CIPA Guide to the Patents Act 7<sup>th</sup> Ed paragraph 64.03 and 64.03) but those points relate to the territorial limitations in the section and are not the issue raised by Mr Davis. The answer to Mr Davis' point is that section 64 is not concerned with remedies for patent infringement, it is concerned with whether certain acts do or do not amount to infringement under national law. The provisions of the Enforcement Directive are not concerned to define what acts may or may not infringe a given intellectual property right. Rather those provisions are concerned with harmonising the remedies available on the footing that there is infringement. However for reasons that will appear below, I will not grapple with that point in any more depth.

195. Universal Balancing's case was that all its balancing machines were the same as each other in their general operation. The label KISS-234 was an indication of a new brand of machine and not an indication that there was anything fundamentally different between the KISS-234 and earlier Universal Balancing machines. Thus Universal Balancing relied on its prior sale of the Green Machine to GKN. This is (undoubtedly) an act which had been committed prior to the priority date. In effect Universal Balancing's case was that the right arising under section 64 from the sale of the Green Machine, allowed it to sell the KISS-234. Universal Balancing puts its case on both limbs of s64. So acts relating to the Green Machine are said to amount to serious and effective preparations to do acts relating to the KISS-234.
196. At one stage Universal Balancing had also relied on the Blue Machine but when it became clear that Universal Balancing's evidence could not pin down what activities had taken place before the priority date in relation to the Blue Machine, Universal Balancing ceased reliance on that machine both as prior art and as a basis for the Section 64 defence.
197. Ms McFarland accepted that there was no evidence that Universal Balancing had, before the priority date, sold a machine which had two or more lower electrodes on the lower arm of a single weld gun. Nor was there any suggestion Universal Balancing had done any other relevant act in relation to such a machine before the priority date. However Ms McFarland submitted that this was irrelevant. She contended that s64 applied in this case and that as a result her client had the right to sell the KISS-234.
198. In order for the section to be engaged one needs to identify what acts the defendant did before the priority date and see how they relate to the acts alleged to infringe. The section essentially gives rise to a right to continue to do an act which was done before the priority date (s64(1)(a)). Then s64(1)(b) provides that the act alleged to infringe need not have been actually committed before the priority date. The defence will still arise if "effective and serious preparations" to do the act had taken place before the priority date. The acts have to have been in good faith but nothing turns on that in this case. There is no allegation of lack of good faith here.
199. In *Lubrizol v Esso* [1998] RPC 727 the Court of Appeal considered the extent to which the section permits any qualitative change as between the act committed before the priority date (or for which there were serious and effective preparations) and the act committed later and alleged to infringe. Aldous LJ explained that the right under section 64 is not a right to manufacture any product and does not allow for expansion into other products. However identity is not required. Aldous LJ approved of the

words used by Mr Laddie QC (as he then was) that the section was intended to give practical protection to enable a man to continue doing what in substance he was doing before (p770).

200. There was some cross-examination of Steve Fowler designed to show that despite the suggestion that the KISS-234 was simply a rebrand of an existing machine, Universal Balancing really regarded the KISS-234 as a new machine or a machine with new features. However in my judgment the test is objective in nature. Although the views of staff at Universal Balancing about whether the KISS-234 was a new machine or has new features might be relevant as evidence in shedding some light on the matter, in the end the question must be one of fact.
201. To some extent the section 64 defence is tied up with Universal Balancing's case on validity. Essentially Universal Balancing's position is that it does not accept that there is anything patentably distinct about the KISS-234 machine as compared to the Green Machine and so, since the Green Machine predates the patent in this case, the patent is either not infringed or invalid (i.e. there is a *Gillette* defence) or at worst there is a defence under s64.
202. First, I have found that the Green Machine is not a product within the claims of the patent (nor is its use within the method claims). Thus s64(1)(a) is simply not engaged. Selling the Green Machine today would not infringe. Universal Balancing have the right to do that if they wish.
203. The acts now found to infringe are essentially the making and selling of the KISS-234. Could the development, production and sale of the Green Machine amount to effective and serious preparations to make or sell the KISS 234? The fact that Universal Balancing regard all their machines as having the same general operation may well be true but it does not help. The two machines in issue (Green Machine and KISS-234) differ in numerous ways. One crucial respect in which they differ is in relation to the presence of two lower electrodes at the lower arm of the weld gun. The Green Machine had a single lower electrode. The KISS-234 has two lower electrodes (or is designed to be fitted with two lower electrodes). It is the two lower electrodes on the KISS-234 which are a key part of the reason it infringes the patent (see above). There is no evidence Universal Balancing were contemplating fitting or preparing to fit two electrodes at the lower arm of the Green Machine before the priority date. I find that the acts committed relating to the Green Machine before the priority date were not preparations to make or sell the KISS-234 at all. They were certainly not serious or effective preparations to do that.
204. Even if, which I reject, the acts committed in relation to the Green Machine could be said to have been acts which would infringe if committed later (or to be effective and serious preparations to infringe), I do not accept that any section 64 right arising from those acts would permit sale of the KISS-234. This is the *Lubrizol* point. Making or selling the KISS-234 is not in substance the same act as making or selling the Green Machine. They are different in numerous ways, not least in relation to the two electrodes point.
205. Accordingly I reject the section 64 defence in this case.

206. Section 62(1) of the 1977 Act provides as follows:

**Restrictions on recovery of damages for infringement.**

- (1) In proceedings for infringement of a patent damages shall not be awarded, and no order shall be made for an account of profits, against a defendant or defender who proves that at the date of the infringement he was not aware, and had no reasonable grounds for supposing, that the patent existed; and a person shall not be taken to have been so aware or to have had reasonable grounds for so supposing by reason only of the application to a product of the word “patent” or “patented”, or any word or words expressing or implying that a patent has been obtained for the product, unless the number of the patent accompanied the word or words in question.
207. Article 13 of the Enforcement Directive bears on the question of damages for patent infringement but it was common ground that the sub-section is compliant with Art 13 and so I will focus just on the sub-section.
208. The issue is about the patent’s existence. If the defendant knew that the patent existed but thought he did not infringe or thought it was invalid then no matter how genuine or honest that belief is, the defence is not engaged. The onus of proof is on the defendant. Moreover it is not enough to prove that the defendant did not know the patent existed. To have the benefit of the defence the defendant also has to prove that he had no reasonable grounds for supposing that the patent existed.
209. The sub-section then deals with a specific point about marking. Many patentees mark their goods with the word “patented”. That is not enough to fix a defendant with knowledge or reasonable grounds for belief. For that sort of marking to work, the patent number must be given.
210. It was common ground that there were two relevant periods. The first period was the time up until the meeting with Nigel Best of Schenck UK on July 2010 at which the patent was raised. Schenck accepted that if Universal Balancing could make out its case for that first period then s62(1) would apply to infringements committed until that point in time. The second period was after the July 2010 meeting. Universal Balancing did not suggest that the defence could run after the meeting.
211. The position of Universal Balancing was that it did not know that the patent existed until the meeting. Universal Balancing contended that prior to the meeting it had no reasonable grounds for supposing the patent existed. It was clear that neither Steve Fowler nor Paul Fowler knew of the patent’s existence until the meeting and Mr Davis did not submit otherwise. Given the size and nature of Universal Balancing as a company, the s62 issue was approached by both sides considering the position of the Fowlers (Paul and Steve). There was no suggestion that the position of any other staff at Universal Balancing was relevant. Accordingly I find that Universal Balancing did not know that the patent existed until the July 2010 meeting.

212. Mr Davis submitted that the real issue is the scope of “no reasonable grounds” and whether the defendant did in fact have grounds. He contended that the test is objective (referring to Terrell 17<sup>th</sup> Ed paragraph 19-30 – 19-31 and *Lancer Boss v Henley Forklift* [1975] RPC 307). Ms McFarland did not disagree. I take it that the correct approach is an objective one in the sense that it involves knowledge of facts from which a reasonable man would arrive at the relevant belief. In other words I need to determine as a matter of fact what Universal Balancing actually knew and then decide what a reasonable person would infer from that. If Universal Balancing was aware of something which would give a reasonable person grounds for supposing that the patent existed, then the sub-section is not satisfied and it does not matter that Universal Balancing itself did not draw the inference from the facts it knew.
213. Mr Davis submitted that the sub-section is narrow and that “companies ought to know better by dint of their size and sophistication”. He referred me to the passage in the CIPA Guide 7<sup>th</sup> Ed para 62.03 and in particular to the statement that “a company with a research and development department or its own in house patent department would seem rarely to be able to take advantage of the provision because of the presumption that such departments ought to take steps to become aware of patents in their field of interest.”
214. There may well be force in the submission but I will avoid generalising. Universal Balancing is not a large multinational corporation with an R&D department or a patent department employing qualified patent attorneys.
215. Although the onus is clearly on Universal Balancing, in order to deal with the issues of fact, it is convenient to see how Mr Davis put Schenck’s case that the defendant cannot establish that it had no *reasonable* grounds for supposing the patent existed. It is as follows:
- i) There are only four significant players in the propshaft balancing industry.
  - ii) Universal Balancing is the second biggest player, with 30% market share.
  - iii) Apart from the defendant, all three other big players patent their inventions.
  - iv) The defendant had worked with Schenck’s sister company Schenck Vibro.
  - v) Patent searching is both appropriate and straightforward in this field and even basic searches will readily identify competitors technology at least to a level that should put in train further enquiry.
216. These points were based on the evidence of Mr Buschbeck of Schenck. Mr Davis submitted that in these circumstances, before launching the KISS-234 product, Universal Balancing ought to have been aware of its competitors’ patent portfolios and in any case should have conducted a patent search; one cannot avoid damages by saying (as Steve Fowler did in his first witness statement (paragraph 55)) “I simply don’t have time to keep such a detailed eye on the defendant’s competitors.”
217. Mr Davis relied on a Schenck brochure for a balancing machine which embodies the invention claimed in the patent. The brochure includes the phrase “patented unbalance correction”. There is no reference to a patent number. Mr Buschbeck

regarded the lack of a patent number as “a pity”, obviously because he was aware of the point under s62(1) that marking goods as patented without the number does not amount to reasonable grounds. I do not have to decide whether and to what extent the provision about marking goods might apply by analogy to a brochure for reasons which appear below.

218. The brochure was apparently on Schenck’s website from 2003. Mr Davis asked both Steve Fowler and Paul Fowler if they had seen the brochure. Steve Fowler had no recollection of seeing the brochure. I accept his evidence and find that he had not seen it. There is no evidence that he had. Paul Fowler’s job included responsibility for Universal Balancing’s website. In that respect he was required to review competitors’ websites. This will have included the Schenck website. However in cross-examination Paul Fowler stated that he had never discovered the brochure on Schenck’s website. I accept that evidence as well. I find that Universal Balancing were not aware of the brochure at any material time. Moreover (insofar as it might matter) I fail to see how it could be said to be unreasonable of Universal Balancing not to have seen the brochure. Accordingly the brochure is irrelevant.
219. The real argument is about whether Universal Balancing ought to have conducted a patent search. Mr Davis submitted that companies of the size of the defendant ought to be employing the services of a patent attorney and should be doing clearance searches.
220. There was a suggestion that this was a patent rich field of technology and that it was astonishing for Universal Balancing to take a substantial market share “without accepting any responsibility not to infringe”. In closing Mr Davis explained that “patent rich” was putting it a bit high. What he meant was that the other players in the field patent their technology. I accept that Universal Balancing’s three competitors in the propshaft field have patents however Mr Buschbeck’s evidence was that the possibility for new developments in this field was limited. I accept his evidence. It resonates with evidence Steve Fowler gave in his witness statement at paragraph 54. That was in the context of the July 2010 meeting with Mr Best. He said:

I had never previously heard of the Patent and indicated this expressly to Mr Best during the meeting. At the time, the defendant did not actively monitor competitors’ patents or designs and I genuinely believed that, due to the common similarities between the type of work propshaft balancers do, no-one in our industry would have bothered to try and register a patent in relation to any of these. The uniqueness of the machines lies within the computer software, balance measurement accuracy and cycle time which, alongside varying levels of customer care and after sales service (along side the basic quality of the machines and their price) drives competition within the market.

221. I find that this is not a patent rich field of technology at all. Quite the opposite. It is a field in which the possibility of obtaining patents is limited. That puts in perspective the fact that all three of Universal Balancing’s competitors have patents. They may

well do but, given Mr Busckbeck's evidence it is not unreasonable for Steve Fowler to have the belief that there was no need to actively monitor competitor's patents.

222. It is true that Universal Balancing have become a substantial player in the market but they do not seek patents themselves. The fact that the original company from which Universal Balancing was developed (Jackson & Bradwell) had balancing machine patents with priority dates in the 1960s and 1970s is neither here nor there.
223. Overall, I find that the relevant facts from Universal Balancing's point of view were:
- i) The number of competitors is small but the possibility for new developments in this field is limited.
  - ii) The KISS-234 has elements which are not in the Green Machine and to that extent was a new machine. However in this field what makes a balancing machine unique were developments in the areas described by Steve Fowler. That does not include the relevant aspects of the KISS-234 which cause it to infringe the patent.
  - iii) Universal Balancing had not seen the brochure which described the Schenck machine as patented. There was no other claim to something being "patented" which came to Universal Balancing's attention.
224. I bear in mind the onus is on Universal Balancing. The facts known to Universal Balancing at the time were not such that would lead a reasonable person to think the patent existed. Nor would these facts lead a reasonable person to think they should conduct patent searches to see if the KISS-234 might infringe a competitor's patent. I reject the submission that Universal Balancing ought to have employed the services of a patent attorney or have been doing patent clearance searches. I find that it has established that prior to July 2010 it had no reasonable grounds for supposing the patent existed.
225. Ms McFarland submitted that Schenck was intimately aware of the defendant's products and contended that no satisfactory answer was given as to why Schenck did not take the obvious step of sending a copy of the patent to the defendant in 2004/05. The significance of 2004/05 was that it appears that Schenck did send a copy to Mr Tinsley at GKN in that period. Miss McFarland submitted that it beggars belief that in such a small market, a company whose patent portfolio was massive and critical to its commercial strategy did not write three letters, thereby notifying the entire market of the existence of the patent. Mr Davis submitted that this was irrelevant because the test under s62(1) is about the defendant's reasonable grounds for supposing and not about whether it would have been easy for the patentee to let the defendant know.
226. I agree with Mr Davis that the test is concerned with whether the defendant had reasonable grounds. That is clear and I have not taken Ms McFarland's submission into account in assessing the position under s62(1). However it has never been explained why Mr Tinsley was sent a copy of the patent (application) in 2004/05. There must have been a reason. I cannot help but note that in this case Schenck appear to have only themselves to blame for the state of affairs in which Universal Balancing had no reasonable grounds for supposing the patent existed until the meeting in July 2010.

*Conclusion*

227. I find the patent valid and infringed. There is no s64 defence. Universal Balancing have a defence to damages under s62 until the July 2010 meeting.