

IN THE HIGH COURT OF JUSTICE
CHANCERY DIVISION
PATENTS COURT

Royal Courts of Justice
Strand, London, WC2A 2LL

Date: 31/03/2010

Before :

THE HON MR JUSTICE FLOYD

Between :

Schütz (U.K.) Limited

Claimant

- and -

(1) Werit UK Limited

(2) Protechna SA

Defendants

Richard Meade QC and Lindsay Lane (instructed by Denton Wilde Sapte) for the Claimant
Simon Thorley QC and Thomas Mitcheson (instructed by Lovells) for the First Defendant

Hearing dates: 3-5 and 8-9 and 11-12 March 2010

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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THE HON MR JUSTICE FLOYD

Mr Justice Floyd :

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Introduction

1. According to Greek legend (as reported by Plutarch):

“The ship wherein Theseus and the youth of Athens returned [from Crete] ... was preserved by the Athenians down even to the time of Demetrius Phalereus, for they took away the old planks as they decayed, putting in new and stronger timber in their place, insomuch that this ship became a standing example among the philosophers, for the logical question of things that grow; one side holding that the ship remained the same, and the other contending that it was not the same.”
2. This paradox, like that of George Washington's axe with its three new handles and two new heads, has divided philosophers for centuries. One of the issues which divides the parties to the present patent action is whether the acts of infringement relied on amount to making a new product, or merely replacing parts in an old one.
3. The claimant, Schütz (U.K.) Limited (“Schütz”), originally brought this action for infringement as exclusive licensee under three European Patents (UK) belonging to the second defendant, Protechna S.A. (“Protechna”). Protechna has taken no active role in the action, but is joined simply because it is the proprietor of the patents, pursuant to section 67(3) of the Patents Act 1977 (“the Act”). The defendant is Werit (UK) Limited (“Werit”). Werit contends, in the usual way, that its activities do not infringe, and that the patents are invalid in any event.
4. The patents which remain in suit are European Patents (UK) 0 370 307 (“307”) and 0 734 967 (“967”). The third, EP(UK) 0 673 846 (“846”), which is now accepted to be invalid, was abandoned shortly before trial. The patents all relate to intermediate bulk containers (IBCs). These consist of an outer protective cage and a removable plastic inner bottle capable of holding 1000 litres of material.
5. The unusual features of the action are these. Firstly, Werit's infringement is alleged to consist of supplying its own plastic bottles to be retrofitted by a third party, Delta

Containers Limited (“Delta”), into second hand Schütz cages. This is alleged to amount to contributory infringement within section 60(2) of the Act. The issues of whether the alleged infringements fall within the scope of the claims thus turn on whether Schütz’s cage falls within its own patents. Secondly, Werit maintain that Delta’s acts of primary infringement relied on are not infringements because they do not amount to “making” the patented product. Thirdly there is a special, partial defence to damages which arises out of an agreement made between Protechna and Schütz, which is said to contravene section 44 of the Act.

6. Mr Richard Meade QC and Ms Lindsay Lane argued the case for Schütz. Mr Simon Thorley QC and Mr Thomas Mitcheson argued the case for Werit.

IBCs and their regulation

7. Early IBCs with plastic inner bottles were made with thin sheet steel. An example is the Schütz Ein-Weg Container first sold in 1980, shown below. As the name suggests, these were single-use containers: it was not possible to replace the inner bottle.



8. Later, Sotralentz and Mauser introduced open composite IBCs, with an outer cage consisting of horizontal and vertical solid metal wires. The Solatrentz is depicted below:



9. When hazardous substances are carried in the IBC, their transport by road is now regulated by the Carriage of Dangerous Goods and Use of Transportable Pressure Equipment Regulations 2009. These are based on the European Agreement concerning International Carriage of Dangerous Goods by Road, based on UN model regulations. These require that an IBC intended for carriage of dangerous goods must correspond to a successfully tested design type which has been approved by a relevant national authority. If passed, the IBC is awarded a UN approval certificate. The testing is conducted on the combination of cage and bottle.
10. IBCs can be single or multi-use. When the bottle is no longer usable it has to be replaced. New bottles are available from the manufacturer of the cage. Replacement with an OEM bottle is called “re-bottling”. Cross-bottling is the practice of inserting one manufacturer’s bottle into another manufacturer’s cage. The industry is divided over whether this is a good thing, because the bottle and cage are not specifically made for one another. So, for example, stabilising loops in the top of the bottle do not match up with bars on the cage. Or the bottle may not fit in such a way that it will drain properly without tipping. Companies which undertake re-bottling or cross-bottling are called “reconditioners”. There is undoubtedly a market for such products: hence this action.
11. A cross-bottled IBC cannot be used under the Regulations for dangerous goods unless the specific combination has an approval certificate. The certificate for the original manufacturer’s bottle and cage combination will not do.

The market in IBCs and the activities of Delta

12. IBCs move from the manufacturer (like Schütz or Werit) to a purchaser (a filler) who then uses the IBC to send product to an end user. Fillers could be large chemical companies such as Dow. End users mentioned in the evidence could be Coca Cola, L’Oreal, Roche or GlaxoSmithKline.

13. Delta acquire used IBCs from end users. They remove the old bottle, execute any necessary repairs to the cage and fit a new bottle. The resulting IBC is then sold on the market. Although some of these IBCs may find their way back to the original purchaser/filler, there is no reason why this should be so. In short, the IBCs produced in this way by Delta are sold on the open market in competition with the manufacturer.
14. The present action arises because Werit sell Werit bottles to Delta who cross-bottle them into Schütz cages and sell them to fillers. Schütz has also sued Delta for, amongst other things, patent infringement. That action has been stayed to await the outcome of this action on the patent issues

The issues

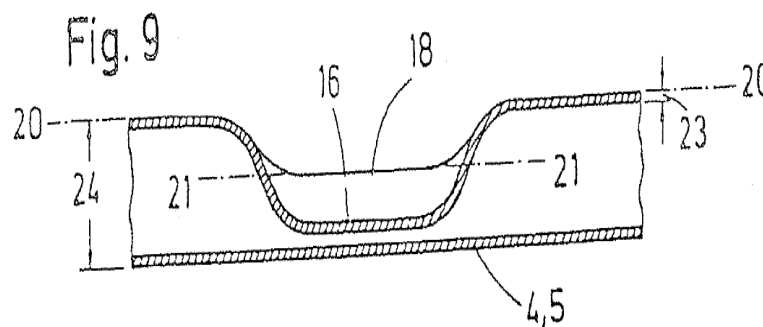
15. The issues which arises are these:
 - i) are the Patents valid?
 - ii) do Schütz's IBCs cross-bottled with Werit bottles fall within the scope of the Patents?
 - iii) is cross-bottling "making" the patented product of either patent?
 - iv) is supplying the Werit bottle for cross-bottling the supply of a means essential within section 60(2) of the Act?
 - v) Does Schütz exhaust its rights under the Patents or grant an implied licence when it first sells the IBCs which are re-conditioned;
 - vi) Does the Protechna Agreement mean that Schütz cannot enforce its rights in the Patents for the relevant period?
16. Issues (iii), (iv) and (v) form a group of issues. Mr Thorley's argument did not focus on issues (iv) and (v). He nailed his colours to issue (iii) rather than (iv), submitting that he could succeed on issue (iii) even if the bottle was an essential means, but that if he failed on issue (iii), then the bottle was likely to be an essential means. Equally he recognised that if he failed on issue (iii), and replacing the bottle was "making" a new IBC, then the exhaustion argument simply did not run.

The patents in suit

307

17. 307 has a priority date of 24th November 1988. It expired on 8th November 2009, so Schütz's case only sounds in damages. The specification is entitled "Pallet Container", although there is no dispute that it relates to what would be recognised as an IBC, with an inner container and an outer grid or cage.
18. The specification points out that the inner container is "interchangeable". (page 1 line 4 of the translation) or "exchangeable" (page 2 line 8). At page 1 lines 20-29 there is a comprehensive statement of the advantages of the invention which I paraphrase as follows:

- i) Lighter and more stable than IBCs with solid rod cages;
 - ii) The particular form of the crossover connections between the tubes gives an optimum connection by resistance pressure welding in the context of mass production;
 - iii) The cage so constructed has high resistance to external and internal forces.
19. The external forces referred to would be understood to be those encountered in stacking and in transport (due to vibration and knocking). The internal forces are those which develop due to hydrostatic pressure. The skilled person would understand that the bottle was not a rigid structure and would, to a degree, balloon outwards unless restrained. As the 1000 litres of liquid is filled into the bottle, there is a significant build-up of hydrostatic pressure on the cage.
20. In the description of the specific embodiments the patentee addresses the problem of “climbing”. Climbing refers to the tendency of IBCs to hook themselves onto horizontal grid tubes or rods of the adjacent container, and so climb up due to vibration and other forces experienced during transport. The problem can be caused by the horizontal rods or tubes forming a ledge onto which another horizontal tube can hitch. It is explained that the invention, at least in this embodiment, requires the vertical and horizontal tubes of the outer cage to lie closely adjacent the inner container and form continuous outer and inner bounding planes, and so prevent climbing. To put it more simply the tubes are indented where they cross over so that the outer tube does not stick out beyond the outer surface of the inner tube. The patent describes it in more detail by reference to a number of Figures, 9 to 12, which I set out below. Figure 9 is a cross section of one tube (the other is the same), and Figure 10 shows how they cross over at the intersection where the indentation is made. Figure 11 is a section through the joint, and Figure 12 is used to explain the pressure resistance welding process.



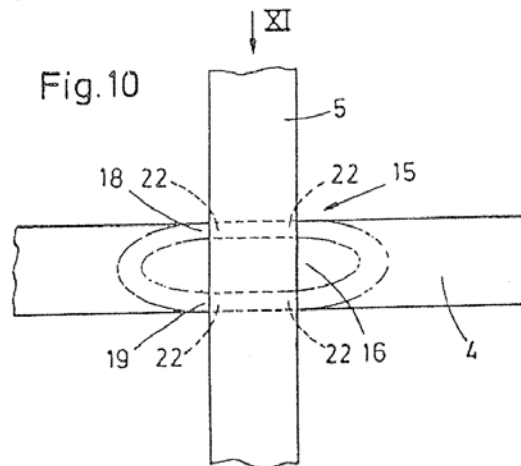


Fig. 11

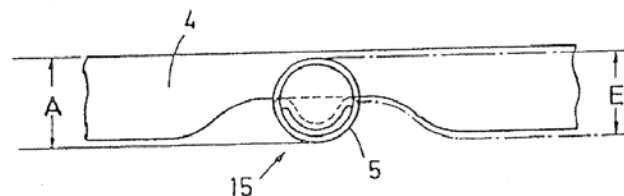
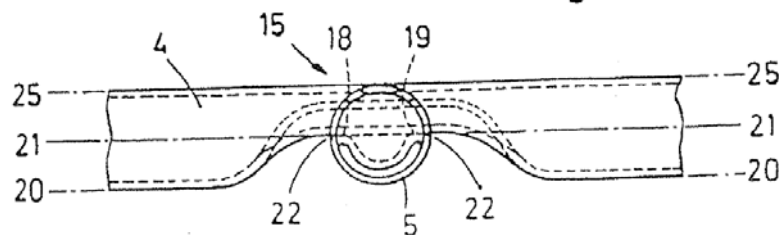


Fig. 12



21. Thus far, there is no real difficulty in understanding what is being taught by reference to the figures. You squash each tube enough to produce a flush surface to the grid, and so prevent climbing. But the description and claims have a puzzling further limitation to do with the wall thicknesses. I deal with this when I come to construction. Here I simply set out the only claim which is relevant, claim 1, with letters added for reference purposes, and the numerals removed:

[A] A pallet container, with a flat pallet, an interchangeable inner container of plastics material with an upper filling opening and a lower emptying device, as well as an outer cage surrounding the inner container and formed of a grid structure with vertical and horizontal metal grid rods,

[B] characterised in that the outer cage is formed by grid rods formed as tubes, which lie closely against the outer wall of the inner container of plastics material,

[C] in that the vertical and horizontal grid rods are drawn in at the crossover points to form trough-like, double-walled indentations extending in the longitudinal direction,

[D] in such a manner that the two curved longitudinal edges of the wall of the indentations of each grid rod extend between a tangential plane and a parallel intersecting plane of the grid rod

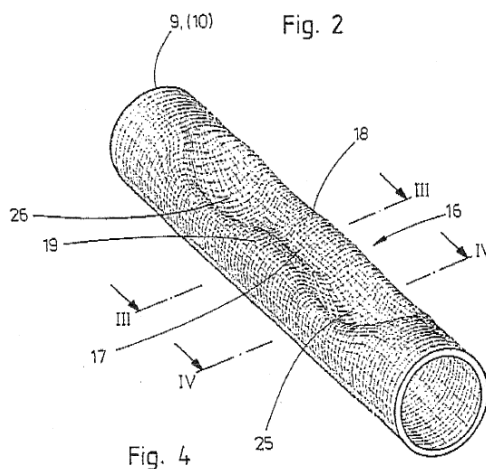
[E] and, at each crossover point between the longitudinal edges of the indentations of two grid rods lying one over the other at right angles, there result four contact locations disposed in a plane, each with a build-up of metal corresponding to four times the grid rod wall thickness,

[F] and in that the grid rods are so connected together by resistance pressure welding of the four contact locations at each crossover point that the rods have common tangential planes inside and outside.

967

22. 967 is also concerned with IBCs. The starting point is the weld joint in the cage of the 307 patent. The weld in this joint is said to be subject to static bending stresses because of stacking of containers and vibration during transport. The object of the invention is stated to be to increase the durability of the joint by relieving the stresses on the joint. The patent explains that this can be achieved by introducing a dimple on either side of the weld and a central raised portion. The idea is that the dimpled portions create more readily bendable portions, thus relieving the stress on the weld itself.

23. Everything is shown in Figure 2 which is a perspective view of the configuration:



24. Claim 1 is in the following form (again without numerals and with added reference letters):

[A] Pallet container for the transporting and storing of liquids, having a flat pallet, an exchangeable inner container made of plastic material with an upper, closeable filler opening and a lower emptying device and also, surrounding the inner container, one outer sleeve which consists of vertical and horizontal lattice bars made of metal which support the plastic inner container filled with liquid,

[B] the lattice bars which are configured as tubes being indented at the intersection points to form trough-like, double-walled recesses extending in the longitudinal direction of the lattice bars

[C] in such a manner that at each intersection point between the longitudinal edges of the recesses of two lattice bars lying perpendicularly one above the other there arise four contact points with a material accumulation respectively corresponding to the quadruple lattice bar wall thickness, and the four contact points of the two lattice bars being welded together at the intersection points

[D] characterised in that the trough-like recesses of the vertical and horizontal lattice bars have a central raised part extending across the cross-section of the recesses,

[E] two lattice bars respectively lying one above the other at the intersection points are welded together at the four contact points of these raised parts and the incisions of the recesses of the lattice bars adjacent on both sides to the raised part

[F] with the contact and weld points form restrictedly elastic bending points with a reduced bending resistance moment relative to the raised part for relieving the weld joints at the intersection points upon application of static and/or dynamic pressure on the lattice sleeve.

25. The part of feature [D] which requires the central raised part to “extend[ing] across the cross-section of the recesses” was added in the course of prosecution, and is derived from the figures rather than any particular words in the specification. It forms the subject of the objection of added matter.

Fact witnesses

26. Schütz called Robert Banks, Schütz (U.K.)’s Managing Director, and Philip Pease, who is the CEO of the Industrial Packaging Association, an organisation which represents both IBC manufacturers and reconditioners.
27. Schütz also relied on a witness statement of Markus Klein, who was not required to attend for cross-examination. Mr Klein supplied the equipments for the Schütz strain mapping experiments.

28. Werit called Bruno Pötz, a retired engineer at Werit, who formerly worked for Schütz and for another company in the field, Mauser.
29. All these witnesses gave their evidence fairly.

Expert witnesses

30. Both sides called no less than three expert witnesses, one in the field of packaging, one in the field of welding and one in the field of FEA.
31. Schütz called:
 - i) Mr Bert Langford as their expert in packaging technology. Bert Langford joined Tanks and Drums Limited (“T&D”), a company concerned at the time mainly with the manufacture of cylindrical drums, in 1968. T&D moved into the market for IBCs in the 1980s. Mr Langford rose to the position of Managing Director (1987) and Chairman (1994) of T&D. During that time he acquired his experience of IBC design and welding techniques. He retired in 1998. Mr Langford appeared to me to be an intensely practical man, far more at ease with a physical design project than with wrestling with the words of expert reports or patent specifications.
 - ii) Mr Patrick Van Rymenant as their welding expert. Mr Rymenant is an academic lecturer in the field of welding, with extensive practical experience by way of consultancy. He was particularly knowledgeable in the field of resistance welding.
 - iii) Professor Dirk Vandepitte as their expert in FEA. Professor Vandepitte is a full time professor at the University of Leuven in the field of structural analysis and a leading expert in FEA.
32. Werit called:
 - i) Dietmar Przytulla as their packaging expert. Mr Przytulla spent his entire career (1959 onwards) working for the industrial packaging company, Mauser until he retired in 2009. He is now a consultant in industrial packaging. He is the inventor of a number of patents in the field of IBCs.
 - ii) John Begg as their welding expert. Mr Begg worked for many years (1966 onwards) for AI Welders Limited who specialise in the manufacture of metal joining machinery. His approach was more practical and less academic than that of Mr Van Rymenant. On the other hand his practical experience was clearly extensive.
 - iii) Dr Daniel Balint as their expert in FEA and strain analysis. Dr Balint is a lecturer at Imperial College in the Department of Mechanical Engineering. His research focuses primarily on metals forming and materials modelling problems. He was more familiar with the actual use of FEA than he was with DIC.
33. Happily, none of these witnesses was subjected to any sustained criticism of the way in which they gave their evidence. I found that they were all doing their best to help

me. Mr Thorley suggested that Professor Vandepitte was applying rather too exacting standards to the Werit FEA experiment, whereas Mr Meade suggested that Dr Balint had an inconsistent approach in which he criticised Schütz's experiments more severely than those of Werit. I do not think that these criticisms were justified. I took Dr Balint's acceptance that he "might" have applied a different standard to be an indication of his fairness rather than anything else. The overall effect of his evidence was that he had tried very hard not to do so.

The skilled addressee

34. Both patents are addressed to an engineer in the field of bulk container design.
35. The parties were divided over whether the skilled team would include a welding specialist. The patents in suit plainly require welding ability to put them into effect, and assume that the skilled person would be able to learn enough about resistance welding, having been told to do so.
36. I think it is right to assume that the skilled team would have as a member someone with experience of welding IBCs. I do not think that it is right to assume that this person is a welding specialist. Werit make this suggestion in order to raise the level of knowledge that the skilled team should be assumed to have. I do not think that is a correct approach. The person I have in mind would be a welding engineer, with the common general knowledge of such engineers.
37. This issue led to a large amount of evidence concerning the extent to which in practice companies in the IBC field would utilise the outside expertise of welding companies. The result of it all was that not everyone had the same practice, some preferring to keep all matters in house as far as possible, for reasons of secrecy amongst other things; and some being prepared to bring in a consultant, from a welding equipment manufacturer or elsewhere.
38. I think all this shows I should be cautious about attributing too much detailed or specialised knowledge to the skilled team at the start of the consideration of their project. In the end, the significance of this issue has decreased if not disappeared completely in the light of Werit's concession that the specific weld in question was not common general knowledge.

Common general knowledge

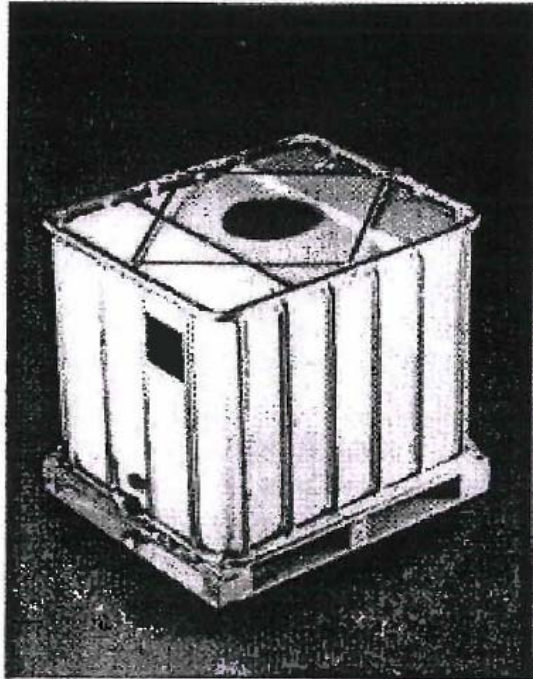
39. Common general knowledge is all that knowledge which is generally known and generally regarded as a good basis for further action by the bulk of those engaged in the art to which the invention relates: *Beloit Technologies Inc v Valmet Paper Machinery Inc* [1997] RPC 489 at pages 494-495. Material which is known by some and not others in the relevant art will not be part of the common general knowledge. It is unlikely that products which had never been used will be common general knowledge (per Luxmoore J in *British Acoustic Films v Nettlefold* 53 RPC 220 at 250) but even products which do reach the market do not automatically qualify: it will depend on the evidence.

Types of IBC

40. The principal types of IBC on the market at the priority date of 307 were (a) the steel caged type and (b) the mesh walled type which I have described above. These were both part of the common general knowledge.

The Ve-We

41. A further IBC known as the Ve-We, developed by Werit and Van Leer, manufactured by Werit and sold by Van Leer was undoubtedly on the market, but Schütz do not accept that it was common general knowledge at the priority date of 307. The Ve-We looked like this:



*VeWe-Container (Stahlblech-Rohrrah-
mengestell und PE-Innenbehälter)
(Fotos Werit, Altenkirchen)*

42. The significance of the Ve-We is that it is made of a tubular construction, as opposed to mesh or sheet steel. It has vertical tubular bars at the sides, unlike any other IBC on the market at the priority date of 307.
43. It is common ground that the Ve-We is the physical incarnation of the container shown in Figure 10 of the cited Schneider patent (see below). But if the Ve-We is common general knowledge, it will be easier for Werit to mount an obviousness attack based on its combination with the ARO citation, which contains details of a weld.
44. Mr Langford maintained that he had not seen a Ve-We IBC. On the other hand its launch had been reported reasonably prominently in journals which he read, including “Hazardous Cargo” (which he described as “quite a bible to read it”) and Packaging Review. Some of Mr Langford’s fellow employees at the time plainly knew of it. It was publicised at the Packaging Trade Show in Utrecht in 1986, which was a national, but fairly small show in Van Leer’s home state.

45. Mr Pötz accepted in cross-examination that whilst the Ve-We was on the market, it was not at that time particularly well known: some people in the trade would know about it and others would not.
46. Whilst I think that it was close to becoming so, I do not think that it was established on this evidence that the Ve-We container was part of the common general knowledge in 1988. Sales were not so widespread that anyone working in the field could be expected to have come across a physical example. One might have seen the design in one of the published articles (although not all contained a picture), but these did not make the Ve-We part of the cgk.

Resistance welding

47. Resistance welding is a form of welding distinct from gas or arc welding. The heat necessary to fuse the metal parts together is generated by passing an electrical current through the point where the parts are brought into contact with one another. As the resistance between the two adjoining parts where they are brought together is higher than in the metal parts themselves, more electrical heating takes place at that point. This brings about the weld. The process is facilitated where there is a projection (either natural or induced) in one of the parts to provide a localised contact point and metal to form the weld. Otherwise it involves no flux or added material. The existence of this form of welding would be part of the common general knowledge.
48. The other issue under this head is the extent to which resistance welding (and in particular projection welding) would have been thought suitable in IBC applications. The evidence established that the applications of this type of resistance welding (as opposed to butt or flash butt welding) were concentrated on lighter applications than IBCs, although there were occasional examples (such as a brake shoe) where a resistance weld would be subject to high stress.

The 4-point weld

49. It was originally asserted by Werrit that the 4-point weld of the kind used in 307 was a matter of common general knowledge at the priority date of 307. As will appear below, an example of a 4-point weld appears in a brochure published by ARO, a welding machine manufacturer, before the priority date of 307. The weld so described featured in a small number of articles published in the press. But no welding textbook shows an example of the weld.
50. By the end of the trial Mr Thorley very fairly conceded that he was not able to contend that the 4-point weld was part of the common general knowledge. I have no doubt he was right to do so. Mr Van Rymenant had not come across it, and given his wide experience of resistance welding, this is significant. Although Mr Begg was clearly aware of the ARO brochure, as he kept copies of it and gave them to his customers, not everyone would have done so, or had ready access to the brochure or its equivalents at all.

Climbing

51. There was a significant dispute over whether there was recognised to be a real problem with climbing in practice with IBCs. Mr Langford's evidence never seemed

to deal with real incidents of climbing. In cross examination he used phrases like “*it was not inconceivable to think that climbing could occur*”, or “*there was always the possibility*” etc. This gave me the impression that it was a theoretical rather than a practical concern. He also referred, as an example of climbing, to the fact that the feet on his company’s steel-framed containers would rest on the next level of framework. In relation to a wire mesh cage he said that the wires “*presented ledges that one adjacent the other could hang on*”. When pressed as to whether it actually happened, he responded that there was “*talk of it in the association. It does not take a lot of imagination to see that it can happen.... I believe it was an issue that had to be resolved, or if it could be resolved, I should say*”. He pointed out that other manufacturers had taken the trouble to design the problem out by placing the horizontals on the inside, which is otherwise not the best place for them from the technical point of view.

52. The trade was certainly aware of the theoretical potential for climbing, and it was certainly discussed amongst those involved in the trade, leading to its mention in patent specifications. But there is an almost complete absence of evidence of it happening in practice, despite the large number of expert witnesses with longstanding experience in the trade. In my judgment, climbing was not a real practical problem in 1988. This is supported by the fact that, subsequent to the priority date, even cages with horizontal square or trapezoidally shaped tubes did not suffer from the problem.
53. I think the notional skilled designer in 1988 would realise that there was a theoretical problem with climbing, and that it was good design practice, if possible, to eliminate the possibility. Beyond that, however, I do not think that the skilled person would be aware of any actual problems occurring with IBCs in the field.

Issues of construction

54. The correct approach to the construction of a patent specification and its claims is now well settled. The task for the court is to determine what the person skilled in the art would have understood the patentee to have been using the language of the claim to mean: see *Kirin Amgen v TKT* [2005] RPC 9 [30]-[35]. In that case the list of principles to be found in the judgment of Jacob LJ in *Technip France SA’s Patent* [2004] RPC 46 was approved subject to some minor observations. Pumfrey J in *Halliburton v Smith* [2006] RPC 2; [2005] EWHC 1623 at [69] to [69] listed those principles, revised to take into account the comments, and added some observations of his own. I apply those principles here.

307

double-walled indentations

55. There is an issue about whether the walls of the indentation must include an air gap, as shown, for example, in Figure 8. Schütz contend that “double-walled” does not include a situation where the tube is collapsed completely so that its opposite walls touch. Werit contend that it does include that situation, but that the tube walls must nevertheless be pressed “more or less together” into a projection. Schütz’s position is adopted in order to avoid the prior art ARO weld (where the walls are too close on their construction). Werit’s position is adopted in order to argue both that the ARO

weld is covered and that there is no infringement because the walls in the alleged infringement are too far apart.

56. Neither submission gives effect to the natural reading of “double walled”. A number of technical considerations were relied on. For example the exclusion of any air gap would result in a sharper and more defined projection, and would provide a precise stop in the indentation process. On the other hand, an air gap allows for a larger weld area. Whilst the skilled person would be aware of these considerations, I do not think that any of them would tell the skilled reader that the patentee was using the term “double-walled” in any unusual sense. All that is necessary is to identify the walls of the indentation and to ensure that there are two. This can be so whether the walls are touching or not and even if they are substantially spaced.

“build-up of metal corresponding to four times the grid rod wall thickness”

57. As I have said, there is no real difficulty with understanding what the patent is telling the skilled reader to do: indent each of the crossed-over tubes so that the end result is a flush grid. But the claim requires that the contact points each have a build-up of metal corresponding to four times the grid rod wall thickness. This has given rise to a lively debate on construction. I first set out the relevant passages from the specification. At page 3 lines 23-37 it says this:

“At the crossover points 15, the vertical and horizontal grid rods 4, 5 are drawn in to form trough-like, double-walled indentations 16 extending in the longitudinal direction of the rods, such that the two curved longitudinal edges 18, 19 of the wall 17 of the indentations 16 in the tubular rods 4, 5 run between a tangential plane 20-20 and a parallel intersecting plane 21-21 of the grid rods (Figure 9). This formation of the grid rods 4, 5 has the result that, at each crossover point 15, four contact locations 22 result, *each with a build-up of material corresponding to a fourfold wall thickness 23 of the grid rods 4,5* (Figures 10 to 12), between the longitudinal edges 18, 19, of the indentations 16 of two grid rods lying over each other at right angles, the said contact locations 22 lying in one plane, namely the intersecting plane 21-21.”

58. The notion of a build-up of material to four times the grid rod thickness crops up again at page 2 lines 39-44:

“The build-up of material to four times the grid rod wall thickness 23 at each of the four contact locations 22 at all crossover points 15 of the vertical and horizontal grid rods 4, 5 of the outer cage 3 has the result that, with suitable control of the welding current and the pressure of the welding press, a current flows through the contact locations 22, which creates uniform weld pools restricted to the contact locations, these pools ensuring homogenous welded joints at the crossover points 15 between the grid rods 4, 5.”

59. Schütz submits that all this means is that, at the contact points, four walls come together. Because the troughs are required to be double-walled, and the edges of each trough contact at each contact point there are inevitably four walls at each contact point.
60. In his report, Mr Begg put forward a number of alternative weld joint arrangements which he considered might be covered by the claim language. For example he suggested it could mean that the weld take the following form:

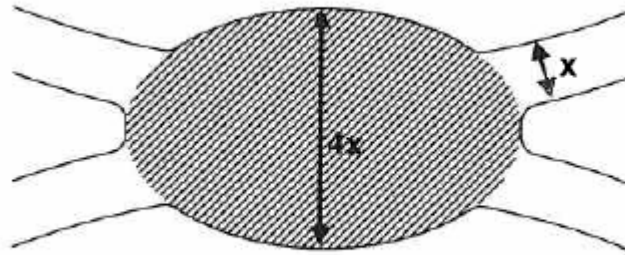


Figure showing a weld nugget with four times wall thickness

61. Alternatively he suggested it could mean that at the points of contact each wall is made of material of double thickness. In cross-examination it turned out that he did not think that any of these could be realised practically. I found this evidence completely unhelpful. These arrangements would not form part of the mental equipment of the skilled reader, so it is difficult to see how they could inform his understanding of the claim.
62. Both sides acknowledge that the phrase is not particularly clear. By the end of the trial Mr Thorley submitted that the feature requires double walled indentations “properly so-called” which serve, by drawing the tubes together (at the point indicated by 18 and 19 in figure 8), to form thick projections by which the resistance welding process can take place. Mr Thorley stresses that if one does not draw in the troughs in this way, one creates a broad projection, and the effect of the double-walled projection is lost.
63. I accept that the phrase is less than clear, but I nevertheless have no hesitation in preferring Schütz’s construction. I do not think that the claim is requiring anything more than the bringing together at the weld points of the two double-walled sides of the troughs. If this is done, the contact for the creation of the projection weld is created. There may, of course, come a point where the troughs are not drawn in sufficiently for it to be possible to say that there is a double-walled indentation, or where the lack of drawing-in prevents the feature of common tangential planes from being realised. But this question depends on those features. The quadruple wall thickness feature requires only the bringing together of the four walls at the weld.

“common tangential planes”

64. There is not really any dispute about what this phrase means if strictly construed. The crossed-over tubes must be collapsed so that the total thickness of the joint is equal to

that of a single, uncollapsed tube. The disputed question is whether the skilled reader would take the patentee to be using the words to mean strict, geometrical co-planarity, or whether the outer tube is permitted to stick out to some degree, and if so by what criterion one judges whether it is sticking out too much. It is a *Catnic* type of question: see *Catnic v Hill Smith* [1982] RPC 183. The issue matters because the horizontal tubes in Schütz's IBC protrude well beyond the outer plane of the verticals.

65. In the specification co-planarity has a twin purpose. Firstly, close contact must be maintained between the rods and bottle so the bottle continues to be supported. Secondly, the co-planarity addresses the issue of climbing. Because the specification tells the reader that climbing is a problem, it is right to approach construction on the basis that one of the patentee's purposes was to avoid it.
66. Mr Meade submitted that purposive considerations would lead the reader to understand that protrusion had to be reduced sufficiently to prevent climbing whilst providing support. He drew attention to claim 2, which requires that the crossed-over tubes be compressed together in the welding process so that the final dimension is the same as a grid rod diameter. This was an indication, he submitted, that arrangements within claim 1 were not to be so strictly limited.
67. Mr Thorley accepted that the skilled person would appreciate that co-planarity did not have to be strict geometrical co-planarity, so that any deviation, however small, would take the IBC out of the claim. Nevertheless he drew attention to the fact that the specification teaches that co-planarity will "prevent" climbing. As the specification contains no further guidance or test in relation to climbing, he submits that the skilled person would understand that he was being told to maintain co-planarity within manufacturing tolerances. Provided he did so he would know that he was avoiding climbing.
68. I do not consider that Schütz get anything from claim 2. It is true that it may sometimes be clear that words in a subsidiary claim are being used to restrict a more generally expressed concept in an earlier claim. But here claim 2 is doing other things as well. It is trying to get across the idea that some of the compression occurs in the welding, which it does by referring to specific dimensions. I do not think that it is a sensible inference that claim 2 was aimed at strict co-planarity, whilst claim 1 is not.
69. Nevertheless, I do not think that claim 1 would be read as quite narrowly as Mr Thorley contends. I accept Mr Meade's contention that departures from strict co-planarity will be permitted provided that the twin purposes of the feature, support and prevention of climbing, are maintained.
70. However, at times Mr Meade appeared to suggest that all that was necessary was that the indentations make some contribution to preventing climbing as compared with a completely unindented joint. I do not think this is what is intended by the co-planarity requirement. It approaches the question from the wrong end. The co-planarity requirement is not satisfied as soon as it is departed from to such an extent that there is some potential for climbing. Whether a departure is sufficient to give rise to potential for climbing is something for the judgment of the skilled reader. If the joint in question is one which the skilled reader would look at and say "I can see that has

the potential for climbing which the patentee was trying to eliminate”, then he is entitled to assume that it is one which the patentee meant to be outside the claim.

967

“double-walled”

71. Mr Thorley drew attention to a passage on page 15 of 967 which says that the planes may be offset marginally without adverse effect on climbing. He submits that this assists in considering the scope of “double-walled”. He relies on the fact that the requirement for common tangential planes is relegated to claim 2. Mr Przytulla expressed the view that “marginal” offset meant no more than 10% as otherwise climbing would not be prevented. If the offset is more than marginal, the indentations will cease to be double-walled.
72. I do not think this is how the skilled person would approach the requirement for a double-walled indentation. I do not think the skilled person would think that there was a numerical or percentage limitation on offset. The teaching as to co-planarity is functional just as it is with 307. It follows that I think that the skilled person would approach “double walled” limitation in the same way as for 307. The skilled person would appreciate that the indentation might not be full depth, and that in consequence there could be a substantial air-gap.

“quadruple lattice bar wall thickness”

73. In my judgment, this phrase means the same as the corresponding phrase in 307. So I say no more about it here.

“a central raised part extending across the cross-section of the recesses”

74. This issue is related to Werit’s added matter objection. As a matter of construction, it was common ground by the end of the trial that the relevant cross section to look at was that extending transversely to the tube, and taken along the line III-III in Figure 2. The claim requires that the upper surface of the indentation must be raised relative to the corresponding position on the dimpled parts all the way across this cross-section.

Integer F

75. There is no difficulty about understanding what is envisaged by Integer F. The introduction on either side of the weld of the points with reduced bending resistance moment (i.e. bendier points in the form of e.g. of dimples) acts to reduce the strain in the weld. Introducing a bendier part into a metal beam whilst maintaining the original cross sectional area of metal will not always reduce the strain on another part of the beam. A lot will depend on how that other part is restrained. So the claim does not simply require the introduction of those bendier points: it requires that the effect be to reduce stress on the weld.
76. There was some debate about whether the claim called for a comparison, and if it did, what the comparison was. Mr Thorley submitted that the comparison had to be with a joint made from tubes without the raised portion, but identical in every other way. Mr Meade submitted that once one had the bendier portions, the claim did not call for any

further comparison. He submitted that the requirement was like one for a shock absorber. One did not have to conduct any comparison. One simply asks whether it absorbs shocks, or in the present case, whether it relieves strain.

77. In my judgment the claim is calling for bending points which have a reduced bending moment as compared to the raised part. Beyond that there is also a requirement in the claim that the bending points are “for” reducing strain in the weld. The implication is that the weld would experience greater strain if the bending points were not there. However, I reject the suggestion that the claim is calling for a comparison with an identical joint but without the raised portion. There is no basis anywhere in the claim or description for such a precise test.
78. I would only add that I do not think that the skilled person reading the patent would think that he had to perform elaborate experiments to satisfy himself that this requirement of the claim is satisfied. There is no reason to suppose that the patentee had itself conducted any such experiment. The claim is simply not written at the level of finite element analysis or digital image correlation. The skilled person would, in my judgment, need to be satisfied on a simple mechanical level that the dimples in any alleged infringing IBC were so arranged as to be likely to relieve strain in the weld.

Infringement

79. A preliminary question is of course whether Delta are making the alleged infringing IBCs. If they are not then Werit cannot be contributory infringers. That issue relates equally to both patents, and I deal with it separately below. I turn first to the question of whether the IBCs resulting from the activities of Delta (whether or not they are “making”) have all the features of claim 1 of each Patent.

307 infringement – claim features

“four times the grid rod wall thickness” and “trough-like double-walled indentations”

80. Werit’s case is that the shape of the indentations in the Schütz cage is such that there are no double walled indentation and the “four times the grid rod wall thickness” feature is missing as well.
81. The shape of the indentation at the cross over points was well illustrated by the following photograph of a joint cut away at 45°:



82. I have no doubt that the indentations at the crossover points are double-walled as required by the claim, as I have construed it. The result is that two double-walled indentations come together at the crossover. The requirement for four times the grid rod wall thickness, as I have construed it, is also present.

“common tangential planes”

83. In the Schütz cages the outer tubes project beyond the inner ones. The outer diameter of all the tubes is 18mm. Measurements of the projection extend from 7.5 to 10.5 mm, although Schütz complain that the latter figure was not measured in their presence. I have little sympathy with this complaint, given the absence of any disclosure by Schütz of any manufacturing drawings, or the provision of a product description. Whilst I believe the latter figure to be a maximum, rather than a typical figure, I am equally sure that the 7.5 mm figure is at the other end of the range. I propose to proceed on the basis that the projection is no less than 7.5 mm, which is a figure approaching half the diameter of the tube. The question on infringement is whether such a departure from geometrical co-planarity would prevent climbing whilst still maintaining support for the bottle by the cage.
84. Schütz’s first experiment shows that the horizontal bars still support the bottle, despite the offset, so Werit’s defence hinged on whether the offset was too great to prevent climbing.
85. As to climbing, Mr Langford’s evidence was that one could tolerate a larger offset in absolute dimensional terms if the projecting section is just a semicircle than if a whole circular section projects (as in the case of a welded mesh of solid rods with horizontals on the outside).
86. Mr Meade relied on some evidence given by Mr Langford of his impressions on first seeing an IBC to the Schütz design.

“Q. You make the point, and what I am trying to get at, you say at the top of that page, the end of paragraph 52: "Moreover, provided the tubes are indented sufficiently, the design also avoids the problem of climbing". What I am trying to get at is, was that something that you remember recalling when you first looked at this product or is it something that you are saying now you are involved in this litigation and considering the question of climbing?”

A. When I first saw the product it had a different geometry on it as far as the indentation was concerned and it struck me at that time. What I have done since is I have checked in my own way, and bear in mind my resources are limited these days to do so, that the sort of impressions I had at the time in fact stood up to reasoning.

Q. So what was the different geometry that you recall seeing?

A. Well, the different geometry was the tube, first of all, was not singularly indented.

Q. I see, you are talking about the weld shape.

A. The geometry of the tubes, yes.

Q. But we are talking here about offsets. Offsets ----

A. I could not possibly say at that stage that they were absolutely flush or they were not flush or whatever. All I could see was a very good exterior construction that would do a lot of things, climbing being one of them, or the avoidance of climbing.”

87. So, although Mr Langford thought something would avoid climbing, it is not clear what sort of offset he was considering. Following some discussion about comparisons with mesh types of IBC, Mr Langford answered as follows:

“Q. Sorry, you tell me what you were trying to say so I can understand what you are saying.

A. First of all, yes, I believe that -- I mean, we are comparing two different things here, but, first of all, I would say that the smaller diameter wire which in terms of its geometry protruded further, quite a long way out, and more than half, as opposed to a tube of a greater diameter where there is the ability of one to slide over the other, but that is not what I was comparing. What I was trying to compare was a tube which was indented and another tube that was indented and their faces were, as near as I can recall, pretty flush to the whole outer cage.

Q. Right. OK, now I understand what you are saying.

A. But I would add to that, that even if it had stood out by some distance, my view would still be the same, that it would be easier to slide over it and it would also act as a barrier between the two pallets, more so than a 7 mm diameter wire.

Q. It all depends on the size, does it not?

A. The size of?

Q. The offset.

A. Yes. Yes, of course.”

88. This evidence is concerned with (a) a truly co-planar Schütz type IBC and (b) a comparison of a non co-planar Schütz type with a wire mesh type. These are not relevant to the issue I have to decide. It is not at all clear to me as a result of this evidence whether Mr Langford had specifically directed his mind to whether the degree of offset established in the present case was sufficient to prevent climbing, or whether it gave rise to a potential for it.
89. Mr Meade submits that the correct approach is to ask purposively whether the degree of overlap of the tubes brought about by the mutually intersecting indentations is such as to leave so little protrusion that potential climbing is dealt with. I agree that this is the correct question, if by “dealt with” he means prevented, but I do not think that the evidence established that this was the case.
90. Firstly, the degree of overlap in the present case is such as to provide an almost semi-circular projection. It is true that this may provide less of a ledge than is provided by an entire circle, but it nevertheless provides a ledge on which climbing could occur. Mr Langford said, and I accept, that:
- “Anything that has a ledge on it is likely to snag”.
91. Secondly Mr Langford said that climbing was a problem with 210 litre barrels because of wave-like protrusions on them which acted as reinforcement. It seems to me that protrusions of this nature present less of a ledge than the almost semicircular tubular projections on the Schütz cage. But even if that is wrong, and they present more of a ledge, I do not see how it is possible to conclude that climbing is prevented with the projections in the Schütz cages in the light of this evidence.
92. Thirdly, I draw nothing from the fact that there is no evidence of the Schütz container climbing in practice. This is because, as I have said, I am in no way persuaded on the evidence that climbing was a real practical problem in 1988 or subsequently. In those circumstances, I do not regard the absence of any evidence of incidents of climbing with the Schütz container as being of any significance: in that respect it was no different from any other.
93. Fourthly, it is quite clear to me from inspecting the exhibits and documents in this case that the offset in the Schütz cage provides a ledge or foothold which has the potential for climbing. Even ignoring the dimples, which give an exaggerated

impression, the projection is substantial. Mr Przytulla exhibited a photograph to his report:



94. I conclude that it is not established that the degree of offset of the tubes in the Schütz cage conforms with the requirement for common tangential planes. There is accordingly no infringement of 307.

967 infringement – claim features

“quadruple lattice bar wall thickness”

95. I reject this as a defence to infringement of 967, for the same reasons as I did for 307.

“central raised part extending across the cross-section”

96. Mr Thorley accepted that a CT scan adduced by Mr Van Rymenant showed that, in the particular tube examined there is a raised portion in the middle complying with this requirement. He submitted however that Schütz’s failure to give proper disclosure of manufacturing drawings meant that I could not conclude that all Schütz’s cages include this feature.

97. I reject Mr Thorley’s submission. If Werit had wanted to put in an example of a tube which did not have this feature, I have no doubt they could have done so. It is sufficiently established that the Schütz cages have this feature.

Integer F

98. Werit’s position is that it is not established that the dimples on either side of the weld joint relieve the weld joints upon application of pressure. This is closely related to the insufficiency argument raised by Werit and I therefore deal with the substance of the point in connection with that issue below. I simply record here that I find that the presence of that feature was established.

99. Mr Thorley submits that even if the double dimple feature works as claimed to relieve the weld joint, it has not been established that it would do so in the context of the combination of Schütz cage and Werit bottle. The experiments in question were done with Schütz bottles. He says that Schütz have not proved infringement.
100. It is true to say that the Schütz DIC experiments, at least in one case, generated the static force by filling a Schütz and not a Werit container. The other experiment used a cut-out joint and generated the forces artificially. It is also true to say that the fit of a Werit container in a Schütz cage will not be the same as for a Schütz container in a Schütz cage, although experiments do demonstrate that when full of water the Werit bottle is in contact with the cage.
101. I think this point is based on a misreading of the claim. The claim only requires that the weld joints are relieved “upon application of static and/or dynamic pressure on the lattice sleeve”. To demonstrate whether this feature is present one applies static or dynamic pressure to the lattice sleeve. For this purpose it does not matter how the static or dynamic pressure is generated, provided of course that it is not wholly unrealistic. In particular it does not matter whether it is generated with a Schütz or a Werit bottle. There was no attempt here to suggest that the pressure generated by the Schütz bottle was unrealistic. I therefore reject this particular answer to infringement. Werit remind me that if I come to that conclusion I should bear it in mind when assessing the “making” point, as it is a further indication that the invention is all about the cage and not the bottle. I will bear it in mind in its proper place.
102. Nevertheless, the result is that the Schütz cage with a Werit bottle falls within the claims of 967.

Validity of 307

103. Werit attack the validity of 307 on the grounds of lack of inventive step and insufficiency.

Lack of inventive step of 307

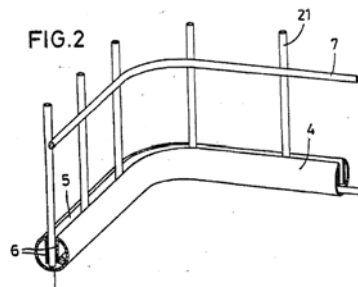
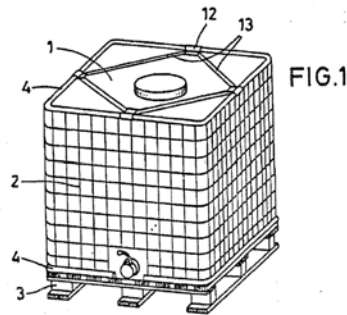
104. Werit rely on lack of inventive step over two items of prior art: United States Patent Specification 4,376,373 (“Schneider”) and a brochure entitled “Resistance Welding of Mild Steel Tubes” issued the ARO Machinery Company of Barnes in South London (“the ARO brochure”).
105. When considering obviousness it is convenient to use the structured approach explained by the Court of Appeal in *Pozzoli SpA v BDMO SA* [2007] FSR 872 at [27]. In *Conor v Angiotech* [2007] UKHL 49; [2008] RPC 28 at [42] Lord Hoffmann approved the following statement by Kitchin J in *Generics (UK) Ltd v H Lundbeck A/S* [2007] RPC 32 at [72]:

“The question of obviousness must be considered on the facts of each case. The court must consider the weight to be attached to any particular factor in the light of all the relevant circumstances. These may include such matters as the motive to find a solution to the problem the patent addresses, the number

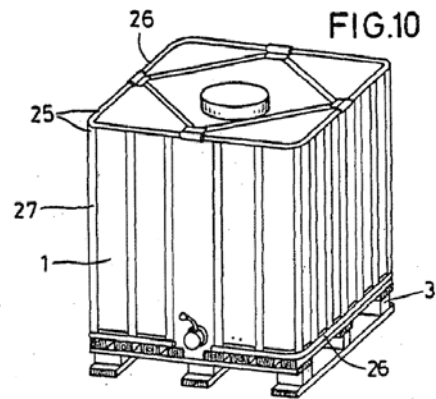
and extent of the possible avenues of research, the effort involved in pursuing them and the expectation of success.”

Disclosure of Schneider

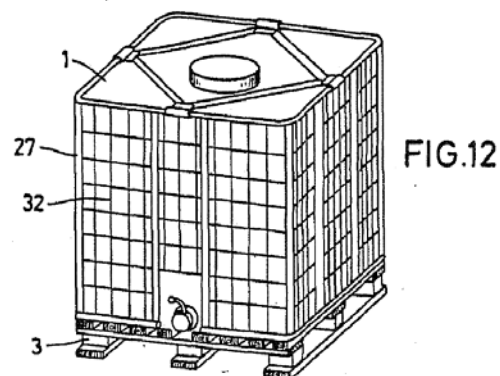
106. Schneider was published on June 30th 1987. It begins with a review of the prior art IBCs. Of the sheet metal types, Schneider says that they suffer from the drawbacks of (a) difficulty of monitoring the contents and condition of the inner container, (b) compression of the container due to failure to release the stopper at the top and (c) insufficient stackability. Of the known mesh types of IBC, Schneider says that they are (a) expensive, (b) have insufficient strength and stability. Accordingly, Schneider states as his object to achieve an economical container for one-way use which avoids these drawbacks.
107. Schneider’s basic idea is to have an upper and lower frame made of tubular material. He explains that this results in a material and costs saving as compared with angle irons used in the prior art. This is shown in Figures 1 and 2:



108. The remaining embodiments all maintain this upper and lower tubular frame. At one point Schneider expressly comments on the possibility of the horizontal rods catching on one another, which he avoids by keeping those rods on the inside.
109. One alternative embodiment is shown in Figure 10, where the grid of vertical and horizontal rods between the upper and lower tubular frames is replaced with tubes. This was commercialised as the Ve-We which I have referred to above. It is said that the Figure 10 arrangement is able to absorb high pressure stresses, bending stresses and transverse forces, with a considerable reduction in weight:



110. A third embodiment combines rather fewer vertical tubular struts with an internal mesh wire grid. This is shown in Figure 12:



111. In connection with Figure 12 it is explained that, due to the rigidity of the structure, the wire grid does not need any fixation with the vertical struts by welding or the like.

Disclosure of the ARO Brochure

112. The ARO brochure begins with a summary of the uses of resistance welding:

Resistance Welding of Mild Steel Tubes

Mild steel tubes and particularly thin wall tubing, as used by locksmiths and ancillary trades are easily resistance welded either tube on tube, or tube on sheet, wire, bar stock, angle, etc., either by straight or spot welding, projection welding or by using various types of junction pieces.

These trades use mild steel tubes:

Metal furniture: tables, chairs, bar stools, shelving, display stands;

Hospital equipment: beds, tables, trolleys;

Camping material: tent poles, folding tables and chairs, beds;

School furniture: tables, benches, drawing boards, cupboards;

Motor and bicycle industry: seats, arm rests, roof racks, accessories;


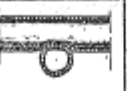
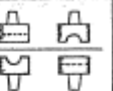





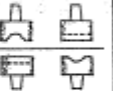
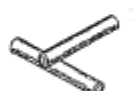
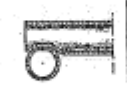
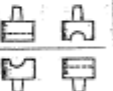






Toys: skates, tricycles, scooters.

Other uses: ladders, ironing boards, prams, light fittings, pedestals for machinery, point of sale advertising stands, building components, wheelbarrows.

113. The brochure lists a number of advantages for resistance welding tubes, compared with classic assembly methods like gas and arc welding. These include time-saving, material and energy saving (no filler or flux), labour saving. Disadvantages listed include capital expenditure, less universally in use than gas or arc welding, only economic for production runs and need for high instantaneous electric power. Results are described as including good quality, strength superior to other welding processes, lack of distortion and a good surface state.

114. The brochure includes a table of welding techniques for mild tubes:

RESISTANCE WELDING OF MILD STEEL TUBES
EXAMPLES

TYPE OF ASSEMBLY	WELDED ASSEMBLY	CROSS-SECTION OF WELD	ELECTRODE SHAPES	PREPARATION OF TUBES	WELD SEQUENCE	*
Cross welding of tubes				None	Simple	A Page 11
Cross tube welding with 50% collapse				None	Complex	B Page 12
Cross welding of tubes with 50% collapse using pre-shaped tubing				Pre-shaping of both tubes	Simple	C Page 13
Cross welding of tubes without overlap				None	Simple	D Page 13
Back-to-back welding of bent tubes				None	Simple	E Page 13
T welding of tubes with one flattened end				Flatten end of one tube and form diodes.		F Page 13

* SEE FOLLOWING PAGES FOR ADDITIONAL DETAILS

115. The first line (A) represents a simple cross weld with no collapse at the joint. The second line (B) represents a cross weld in which the tubes are collapsed 50% under pressure. The third line (C) is the one that had been the subject of most attention in this case. It has a pre-formed indentation so as to collapse the tube before the weld takes place. The corresponding description is:

“Very good results can be obtained, but before welding, each tube has to be shaped at the weld area. Through “dishing” (pressing inwards) each tube at the weld area, 4 contact points

are obtained, which produce four spots during welding and consequently a strong assembly.”

Werit’s obviousness attacks

116. I have identified the skilled person, and what would and would not be part of his or her common general knowledge above. The inventive concept of claim 1 is adequately defined by the claim as I have construed it.
117. The differences between Schneider and the inventive concept of claim 1 of 307 are:
- i) There is no grid structure of vertical and horizontal tubular grid rods as called for in Features A and B;
 - ii) There are no double-walled, indented crossover welds of the kind called for in Features C, D, E and F.
118. The differences between ARO and the inventive concept of claim 1 are that it discloses the four point weld in crossed hollow tubes, but nothing else. I have rejected Schütz’s argument that the “double-walled” requirement excludes a fully collapsed indentation in the tube.
119. Mr Thorley advanced three separate obviousness arguments. The first started from the Ve-We as common general knowledge. That argument fails in the light of my factual finding that the Ve-We was not common general knowledge. The second argument starts from Schneider, and seeks to combine it with the ARO brochure, whilst recognising that neither is common general knowledge. The third argument starts from the proposition that, although not common general knowledge, the Ve-We would be found in the course of a survey of existing designs conducted without invention and that the ARO brochure can be combined with it. I consider the second and third arguments in turn.

From Schneider

120. Was it obvious to go from Schneider to something having all the features of claim 1? Werit contend that it was by the following route. First, they say, the skilled person would realise that Figure 10 required further restraint by means of horizontal tubes. This would have the advantage that it would be lighter than the Figure 12 arrangement, and would enable the heavy mesh to be dispensed with. Having arrived at an arrangement with horizontal bars, the question of how to weld it would arise. The ARO brochure would be found by means of a suitable search. There was no invention in combining the two together. It was what Mr Thorley described as a “permissible mosaic”.
121. There is no doubt that an obviousness attack may be maintained, even if it requires two documents to be read together. In *Scinopharm Taiwan Limited v Eli Lilly & Co.* [2009] EWHC 631 (Pat) Kitchin J put it in this way:

“There is one other matter it is convenient to mention at this stage. Scinopharm's case depends, in part, upon reading various items of prior art together. It contends it is permissible to do

this if they are in the same technical field. I do not agree. In my judgment it is only permissible to read two documents together if it is obvious to do so, as the Court of Appeal made clear in *Smithkline Beecham v Apotex Europe* [2005] FSR 23 at [96]:

"96. I think the Judge erred in principle here. The skilled man has his common general knowledge — the mental tools of his trade — but no more. The law of obviousness supposes that he can be given any individual piece of prior art and read it with that knowledge. The piece of prior art forms part of the "state of the art". What he cannot do is to just link one piece of prior art with another, unless so to do would itself be uninventive. No-one disputes what Lord Reid said in *Technograph v Mills & Rockley* [1972] RPC 346 at page 355:

"In dealing with obviousness, unlike novelty, it is permissible to make a 'mosaic' out of the relevant documents, but it must be a mosaic which can be put together by an unimaginative man with no inventive capacity."

The question whether it is obvious to read two documents together is one to be considered in the light of the particular circumstances of each case. Relevant factors may include whether one document refers to the other or whether one or both documents would be found on a literature search of the kind the skilled person would routinely carry out before attempting to find a solution to the problem the patent addresses.

122. Mr Thorley postulates a skilled person starting from Schneider, and faced with the problem of how to make adequate welds for the vertical and horizontal tubes which he has decided to introduce. He says that, if he did not already have the ARO brochure he would find it by a reasonable search. The brochure would give him what he wanted.
123. I think this obviousness attack fails at almost every stage. I am prepared to accept, as I must, that a skilled team would consider Schneider and read it with interest. Moreover, I do not accept Mr Langford's evidence that Figure 10 of Schneider would be thought of as such a bad design that it would not be worth trying to improve at all. The evidence shows that the commercial embodiment, the Ve-We, continues to be sold today, which would scarcely be the case if it was as bad as Mr Langford maintained. The real difficulty is that I do not see why the skilled person would think of adding horizontal tubes to the design of Figure 10. Mr Przytulla's evidence was as follows:

"The skilled person would know that the diameter of the vertical tubes used is important for obtaining sufficient rigidity. Decreasing that diameter may allow him to increase the volume available for the inner bottle, or have a less complicated inner

bottle. However, they would also have known that thinner tubes alone are more likely to bend out so the packaging engineer would compensate this by putting in either a wire mesh or horizontals (tubes or rods) to remedy this. Of these options, adding wire mesh to support the vertical tubes would reduce bulging but it would also add weight and cost and would involve a difficult welding process, whereas using tubing for both may provide a lower weight alternative.”

124. However there is nothing in Schneider to indicate that the volume of the inner bottle shown was inadequate, or that the inner bottle was too complicated. Mr Przytulla accepted in cross-examination that there was nothing in any of the figures in Schneider which indicated that there was a problem which required fixing.
125. It is possible that the skilled person would think that the arrangement of Figure 10, relying as it does only on vertical struts, required some form of strengthening. But, as Mr Przytulla accepted, if that were the case, Figure 12 would supply the solution, although with some added weight.
126. It is superficially attractive to suggest that the skilled person would appreciate that adopting both horizontal and vertical tubes would be a way of getting the strength of the Figure 12 embodiment without the added weight. But it was not established on the evidence that this was an obvious thing to do. I accept Mr Langford’s evidence that it would not have entered his head to do it with the type of projection welding that existed.
127. In my judgment, too many things would have to fall into place simultaneously before the skilled person would even contemplate adding horizontal tubes to Schneider. Firstly, the skilled person would have to decide that he wanted something stronger than Figure 10 but lighter than Figure 12. It would have to occur to them that some weight saving could be achieved if one used horizontal tubes instead of wire mesh in Figure 12. Secondly they would have to work out how horizontal tubes were going to be incorporated into the structure, when this was not something which had appeared in any prior IBC. Should they, for example, go on the inside of the verticals and restrict the available volume or cause the bottle to be re-designed? Or should they go on the outside when Schneider appears to prefer internal horizontal members for reasons of snagging? Thirdly they would have to decide to forego an advantage of the Schneider arrangement, which explains that welding of the mesh to the vertical struts can be dispensed with. Fourthly, and in consequence, they would have to consider what generally known welding methods were available to create such a structure, and whether those methods would be suitable.
128. None of these matters can be said to have a self-evident answer. I think that if the idea of horizontal tubing came into the mind of the skilled reader of Schneider, he or she is much more likely to reject it than to wish to pursue it. I believe that the reader would conclude that, given the problems presented by horizontal tubing, there was a good reason to adopt Figure 12 rather than embark on research to see if horizontal tubing could be employed. In my judgment, the idea of adding horizontal tubing to Schneider was not an obvious one.

129. Even if the skilled person got as far as wishing to pursue the idea of horizontal tubing, I do not accept that it is established that it would be obvious to combine it with the ARO brochure and thus arrive at the 4-point weld. The evidence did not persuade me that a literature search would be conducted, or that it would necessarily find the four point weld. So the mosaic which Mr Thorley seeks to construct is not, on the evidence, a permissible one.
130. In any event I was not persuaded that resistance projection welding would have recommended itself to the welding engineer for the heavy duty task in hand.
131. It seemed to me that the whole of this obviousness attack was driven by hindsight. In fact the 307 invention represented a useful advance over Schneider by providing additional strength over Figure 10 whilst avoiding the increased weight of Figure 12. Schneider contains not the remotest hint of how that is to be achieved.

From the Ve-We

132. This second route to the invention is independent of the Schneider patent, and did not depend on proving that the Ve-We was common general knowledge, which it was not. It argues that the skilled team setting out to design an improved IBC would inevitably conduct a survey of the IBCs on the market, find the Ve-We and decide to improve it in the way I have already described. It was legitimate to consider the reaction of such a team to the ARO brochure if it had placed in front of them and been read with interest. Such a combination is doing no more, Mr Thorley submitted, than combining a common general knowledge approach with a single citation.
133. In this scenario, the skilled person would not have in front of him or her the context of the various embodiments shown in the Schneider patent, or the discussion of the advantages and disadvantages of the various arrangements. One has to consider instead the reaction of the skilled person to the IBC itself, or its description in the literature. The evidence did not always distinguish very clearly between these two alternative scenarios.
134. Mr Thorley relies again on Mr Przytulla's reasoning: sufficiently stiff tubular struts would be bulky, so use thinner struts and horizontal restraint.
135. I do not think that it is established that the skilled person faced with the Ve-We, or its description in the literature, would conclude that it could or should be modified in the way suggested by Mr Przytulla. There was no such suggestion made at the time. On the contrary the trade literature which reported the Ve-We said that the design was optimal, there was only slight deformation even when pourable products of high density were contained in it, the stacking strength was good, the tubular frame withstood even an impact test and, despite its low tare weight, it offered a high degree of reliability. Quite apart from the literature, there was no compelling evidence that anyone had appreciated that there was any problem with the geometry of the struts of the Ve-We at all.
136. Mr Langford's somewhat disparaging evidence about the Ve-We design was theoretical, because he had not come across the design at all. So I do not regard it as a reliable guide to the skilled person's reaction to an actual Ve-We or a description of it.

137. I also think there is force in Mr Meade's submission, which is supported by the evidence, that the project proposed by Mr Thorley was a very broad one. There would have been no reason for the skilled team to focus particularly on the Ve-We as opposed to the numerous other types of IBC on the market, particularly in the absence of any evidence of any actual criticism of it.
138. Accordingly I do not think that on this approach the skilled person gets to the point where he would see the application of the weld shown in the ARO brochure, even if it were placed in front of him. In the absence of any evidence that there was real problem to be solved with the Ve-We, all this is really no more than a hindsight reconstruction of the invention.

Insufficiency of 307

139. A patent will be invalid if "the specification of the patent does not disclose the invention clearly enough and completely enough for it to be performed by a person skilled in the art": section 72(1)(c) of the Act.
140. Insufficiency attacks come in a number of different forms, the most straightforward of which is where following the express teaching of the patent does not enable the skilled addressee to perform the invention either at all or without undue effort. Another type of insufficiency is that which arises through ambiguity. If the skilled person cannot tell whether he is working the invention or not, the specification can be insufficient. It is not, however, enough to establish this type of insufficiency to show that there may be a puzzle at the edge of the claims. It will normally be necessary for the problem to permeate the whole claim. An example of an insufficiency of this type is the molecular weight test in *Kirin Amgen* at [121] which made it impossible to tell whether there was infringement or not.
141. Werit say that the specification of 307 is insufficient because the meaning of the quadruple wall thickness feature is unclear and so the specification does not enable the reader to make a device having this feature.
142. Mr Thorley recognised that a finding of this nature is something of a last resort. The court should try its best to discern a meaning for the claim before throwing up its hands and declaring it invalid. I have tried my best, and as a result have been able to arrive at a construction of the feature in question, albeit not that for which Mr Thorley contended. It follows that I do not think that the feature is so ambiguous as to give rise to insufficiency.

Validity of 967

143. Werit contend that the invention of 967 is obvious in the light of 307 and common general knowledge. Alternatively they say that the configuration claimed shows no advantages over the prior art, and thus no inventive step can be present. The latter argument is wholly dependent, as I understood it, on a finding of insufficiency. It is convenient to deal first with insufficiency, and my reasons for finding infringement of Feature F, which I held over from earlier in this judgment.

Insufficiency of 967 and infringement of Integer F

144. Werit rely on the insufficiency of the quadruple wall thickness feature, discussed under 307. The result is the same here. In addition they rely on two further attacks which amount to saying that the double dimple feature does not work:
- i) Integer F: Werit contend that the specification does not teach how to achieve the claimed effect, because some or all embodiments otherwise falling within the claim do not achieve it. Alternatively the meaning of Integer F is unclear.
 - ii) To the extent that the grid cage of a Schütz IBC when fitted with a Werit bottle infringes claim 1, the specification is insufficient as it does not teach how to relieve “the weld joints at the intersection points upon application of static and/or dynamic pressure on the lattice sleeve”.
145. So far as lack of clarity is concerned, I reject the pleas for the same reasons as for the quadruple wall thickness feature. I have been able to arrive at a construction of the claim.
146. There was no dispute that if the claimed invention did not produce the technical effect of relieving the weld joints, then insufficiency would be established. There were three main strands to the evidence on this topic:
- i) Schütz’s simple mechanical analysis. Schütz rely on the evidence of Mr Van Rymenant to establish that the theory of weld relief advanced in the patent is, on the face of it, likely to work. He draws an analogy with a ruler bent over a pair of pencils and pressed down at the end. If one introduces a more flexible part into the end portions of the ruler, then the amount of bending between the pencils (representing the weld) will be less. Dr Balint did not believe that such a mechanical analogy was appropriate.
 - ii) Werit’s experiments based on finite element analysis. These purported to show that, if anything, the double dimple geometry made stress at the weld worse rather than better. The experiments were the subject of a head-on attack by Schütz. They were defended by Dr Balint, although it was not Dr Balint who set them up or carried them out.
 - iii) Schütz’s DIC experiments which purported to show in a qualitative way that stress relief was occurring. They are attacked by Werit on a number of grounds.
147. I have to say that I regard the first of these strands of evidence as far more in line with that which the reader of the specification would expect to have to consider than either of the sets of experiments. There is nothing whatever in the specification to suggest that the patentee had undertaken the level of analysis represented by the experiments. He is simply putting forward a simple mechanical idea which he expects to work.

Simple mechanics

148. Werit’s position, supported by Dr Balint, is that introducing more flexible areas into the rods will not necessarily relieve stress on the joint. I accept that is correct. However I accept the evidence of Mr Van Rymenant that in the sort of joint with which we are concerned, and in particular one where the weld is restrained, it is

inherently likely that the inclusion of weakened portions will relieve the stress on the weld. I did not find Dr Balint's evidence on this aspect compelling. Firstly, it was based on an apparently general belief that one should not attempt to form simple mechanical conclusions of this kind. This is a point which may arise from his training in his specialisation, and may well represent sensible scientific caution. But the exercise which I am conducting is one based on the balance of probabilities. Secondly, Dr Balint put forward no alternative mechanical explanation of his own. Of course, he was not bound to do so. But I am not therefore faced with any counter-evidence which makes Mr Van Ryment's explanation implausible. Thirdly, I think that the overall impact of Dr Balint's evidence was to accept that the mechanical explanation was very plausible, but that the overall structure was too complicated for one to be certain. I think that is a fair way of putting it, but still leaves open a finding that the explanation is more likely than not.

149. Accordingly, I approach the matter on the basis that without the experiments I would have been inclined to hold that welds of the kind that are shown in 967 and implemented in the Schütz/Werit IBC do benefit from the use of the double-dimple geometry.

Werit's FEA experiment

150. FEA is a computer modelling technique. It works by notionally dividing the system under investigation into very small elements, applying a notional force in the model and then analysing the effect of this force on each element.
151. Werit's FEA experiment was devised at Optimised Engineering Limited (OEL). For reasons which were not explained, Werit's own expert witness, Dr Balint, was not involved in the design of the experiment. No witness came forward to explain or justify how the various inputs into the system were determined. This practice (of presenting a litigation experiment to an expert as a *fait accompli*) has previously been the subject of adverse comment by Pumfrey J (as he was then) in *Mayne v Debiopharm* [2006] FSR 37 at [9]:

“This approach to the preparation of experimental evidence consisting, as it does, of presenting to the expert a *fait accompli* in the form of a completed experimental protocol is in my view always subject to the risk that it will be unhelpful, both in the general case and certainly in any case where anticipation by inevitable result is alleged. Indeed, it is difficult to conceive of any more effective way of leading an expert witness than to place in front of him a protocol for the performance of an experiment and ask a question of the form: ‘That is all right, is it not?’”

152. The present case is of course is not one of anticipation by inevitable result: but Pumfrey J expressly does not confine his comments to that case. I consider that they apply with considerable force here.
153. One aspect of the FEA experiment which is striking (and which struck Dr Balint when he first encountered the experiment) was that the computer modelling produces results for peak stress which are far in excess of the elastic limit of the material concerned.

Had these peak stresses occurred in the product itself, it would have ruptured, which in fact it does not. As Mr Van Rymenant pointed out, the results were completely different from physical reality.

154. Dr Balint's defence of the experiments was on the basis that, as elastic behaviour had been assumed throughout the experiment, one could still make valid comparisons (between geometries with and without dimples), because the behaviour would be linear and could be extrapolated back to a region of realistic stress.
155. I have to say that these wholly unrealistic peak stresses do not inspire any confidence in the experiment at all. What I found particularly worrying is that Dr Balint assumed that the results were high because too high a load had been imposed. However this explanation does not seem to me to be correct. Such evidence as there was in the case suggested that sensible loads were used, as one would have expected. This begs the question as to what was producing the spurious results if Dr Balint's explanation of excessive load is not accepted. Dr Balint was not able to provide any alternative explanation. It is possible that those who designed the experiment might have been able to do so, but they did not.
156. Beyond this there were numerous detailed criticisms of the experiment. But I have said enough to explain why I cannot place any confidence in it. The manner in which it has been placed before the court, coupled with the obviously eccentric, anomalous and unexplained results, makes it of no value.

Schütz's DIC experiment

157. Digital image correlation is, in contrast to FEA, an experiment carried out on a physical structure. It is also referred to as "strain mapping". The item in question is sprayed with fine powder and subjected to measured force. Cameras take detailed pictures of the item at regular intervals, and so it is possible to track the movement of the individual powder particles. As strain is proportional to displacement, a map of the actual strain over the surface can be obtained. If properly carried out, the technique allows for a qualitative analysis sufficient to determine in a given comparison whether there is less or more strain.
158. Schütz performed two experiments. The first involved analysing a joint within an IBC. The IBC was filled as the means of applying force. The second involved a cut-out joint in which force was applied artificially. The experiments were done on "old geometry" and "new geometry", that is to say a joint as described in 307 and a joint as described in 967 respectively.
159. Werit's first criticism of the experiment was that the differences between old and new geometry involved more than just the dimple with raised central part feature. In accordance with basic scientific principle, a proper test would isolate this variable and keep everything else the same. For example the overall length of the indentations was not the same in both cases. How therefore does one tell whether such differences as are observed are accounted for by the dimples? Mr Van Rymenant's answer to this was a pragmatic one: no like for like comparison was available.

160. I have rejected a construction of the claim which requires a like for like comparison. Moreover, in the light of the fact that I have rejected Werit's positive experimental evidence of insufficiency, Schütz do not have any case to meet on the issue.
161. So far as infringement is concerned, I have already come to the conclusion on the basis of simple mechanics that the inclusion of a double dimple arrangement into a structure of this type has the effect of relieving stress on the weld. The only remaining question is whether the DIC experiment provides additional support for Schütz on the issue of infringement. Although there were numerous criticisms of the experiments, Mr Van Rymenant's view was that they did provide some confirmation of his simple mechanical view. On balance, I preferred his evidence on this point to that of Dr Balint. To the extent that it matters, therefore, I consider that the DIC experiments provide a little confirmatory support of the fact, established by the simple mechanical analysis, that the Schütz cage with a Werit (or any) bottle will possess Integer F of the claim.

Conclusion on insufficiency of 967

162. In my judgment, 967 is not insufficient. Putting aside the experimental evidence, I am still of the view that it is more likely than not that the presence of the dimple geometry will relieve strain. What the experiments show is that this is a remarkably difficult fact to prove by modelling or empirically. But I am nevertheless persuaded that it will occur in the weld joints into which it is incorporated.

Lack of inventive step of 967

163. The principal attack of lack of inventive step was based on the assertion that the invention provided no benefit, for essentially the same reasons as are argued in support of the insufficiency attack. In the light of the conclusions I have come to there, this obviousness attack fails.
164. Mr Thorley submitted that if all that is required by Integer F was the simple provision of points of weakness to allow for preferential fracture away from the weld, then this was obvious. However this construction was not the one I arrived at, and so the point does not arise.

Added Matter 967

165. The test for added matter is whether subject matter relevant to the invention has been added: *Napp v ratiopharm* [2009] RPC 18 at §§69-71. Intermediate generalisations are not permitted, that is to say the taking of features which are only disclosed in a particular context and introducing them into the claim deprived of that context. Pumfrey J described this in *Palmaz's European Patents* [1999] RPC 47, 71:

"If the specification discloses distinct sub-classes of the overall inventive concept, then it should be possible to amend down to one or other of those sub-classes, whether or not they are presented as inventively distinct in the specification before amendment. The difficulty comes when it is sought to take features which are only disclosed in a particular context and which are not disclosed as having any inventive significance

and introduce them into the claim deprived of that context. This is a process sometimes called 'intermediate generalisation.'

166. Werit say that the matter disclosed in 967 extends beyond that disclosed in the application for the patent as filed in that the feature of claim 1 that the central raised portion “extend[s] across the cross section of the recesses” is not disclosed in the application as filed.
167. In the end there was no dispute that the figures in 967 did show a raised portion extending across the cross section of the recesses. Mr Thorley said that this disclosed for the first time the inventive significance of this feature, and the inclusion of this feature in the claim amounted to an impermissible intermediate generalisation.
168. It is true that no particular attention is drawn to the requirement of the extent of the raised portion in the application as filed. But the objection of added matter does not arise every time a feature is taken from the body of the specification and placed in the claims. If that were so very few amendments of this kind would ever be allowed. The objection comes when one strips the feature of its context. I do not see that this can be said to have happened in the present case. The raised portion was always a feature of the claim: the amendment adds more detail, but the context is identical.
169. The objection of added matter fails.

Has Delta “made” the alleged infringements of 307 and 967?

Law

170. Section 60(1) of the Act prescribes the various acts which amount to an infringement of the patent monopoly. Section 60(1)(a) specifies the infringing acts for the case where the invention is a product:

“(a) where the invention is a product, he makes, disposes of, offers to dispose of, uses or imports the product or keeps it whether for disposal or otherwise.”
171. The leading case in this country on the question of what amounts to making a product for the purposes of section 60(1)(a) of the Act is *United Wire Ltd v Screen Services (Scotland)* [2001] RPC 24. United Wire owned two patents for heavy duty screen assemblies (effectively large sieves) for use in connection with the recycling of well drilling mud. The screen assemblies consisted of two main parts: the filter mesh itself and a frame to support it. The defendants were engaged in reconditioning worn out screen assemblies originally manufactured by the plaintiffs, reconditioning the frames and fitting brand new mesh. The worn out assemblies were supplied to them by customers of United Wire. These activities were alleged to infringe the two patents. The first patent related to features of the mesh, namely differential tension in the mesh itself, whereas the second, which remained in force, related to a frame which maintained differential tensions in the mesh. The principal claims of both patents had features directed at both frame and mesh. The defendants ran three defences, which can be paraphrased as implied licence, exhaustion and “not manufacture”. The trial judge (Robert Walker J as he was then) rejected the claim to infringement by making

on the ground that there was an implied licence to repair the patentee's articles. He was "narrowly persuaded" that what the defendants were doing was repair.

172. The Court of Appeal (Evans, Aldous and Ward LJJ) held that there was infringement on the grounds that the defendants were repairing the *frame* but making a new screen. Lord Justice Aldous, who gave the leading judgment, said this at page 450:

"It is therefore better to consider whether the acts of a defendant amount to manufacture of the product rather than whether they can be called repair, particularly as what could be said to be repair can depend on the perception of the person asking the question. Even so, when deciding whether there has been manufacture of the product of the invention, it will be necessary to take into account the nature of the invention as claimed and what was done by the defendant."

173. Lord Justice Aldous appears to have accepted a submission by counsel for the defendants that it was significant that the reconditioned assembly was not normally returned to the customer who had provided it to the defendants. He concluded that the steps taken by the defendants were equivalent to the purchase on the open market by them of frames and using them to make a screen assembly.

174. The House of Lords dismissed the further appeal. Lord Hoffmann, who gave the leading speech in the House of Lords, first rejected the implied licence and exhaustion defences as being concerned essentially with explaining why a person who purchases a patented article cannot be restrained from using it or dealing with it in any way. He continued at [70]:

"where however it is alleged that the defendant has infringed by *making* the patented product, the concept of an implied licence or exhaustion of rights can have no part to play. The sale of a patented product cannot confer an implied licence to make another or exhaust the right of the patentee to prevent others from being made. A repair of the patented product is by definition an act which does not amount to making it: as Lord Halsbury L.C. said of the old law in *Sirdar Rubber Co. Ltd v Wallington, Weston & Co* (1907) 24 RPC 539 at page 543:

"you may prolong the life of a licensed article but you must not make a new one under the cover of repair."

Repair is one of the concepts (like modifying or adapting) which shares a boundary with "making" but does not trespass upon its territory. I therefore agree with the Court of Appeal that in an action for infringement by making, the notion of an implied licence to repair is superfluous and possibly even confusing. It distracts attention from the question raised by section 60 (1) (a), which is whether the defendant has made the patented product. As a matter of ordinary language, the notions of making and repair may well overlap. But for the purposes of the statute, they are mutually exclusive. The owner's right to

repair is not an independent right conferred upon him by licence, express or implied. It is [a] residual right, forming part of the right to do whatever does not amount to making the product.

175. Having considered the two ways in which the test was formulated by Buckley LJ in *Solar Thompson Engineering Co. Ltd v Barton* [1977] RPC 537, Lord Hoffman said he preferred asking:

“whether, having regard to the nature of the patented article, the defendant could be said to have made it.”

176. Lord Hoffmann explained the correct approach to the facts in that case as at [73] as follows:

“It is quite true that the defendants prolonged the useful life of the *frame*. It would otherwise presumably have been scrapped. But the *screen* was the combination of frame and meshes pre-tensioned by attachment with adhesive according to the invention. That product ceased to exist when the meshes were removed and the frame stripped down to the bare metal. What remained at that stage was merely an important component, a skeleton or chassis, from which a new screen could be made.”

177. Lord Bingham, at [55], expressly adopted the test as propounded by Aldous LJ. At [54] summarised at the position in this way:

"the grant of a patent for a product rewards the inventiveness of a patentee by giving him, for the term of the patent, a monopoly right to exploit the patented product which he has invented. The product entitled to protection is that specified in the claim of the patent as interpreted by the description and any drawings contained in the specification: Patents Act 1977, section 125. The protection is against infringement which, in the case of a product, means making, disposing or offering to dispose of, using or importing the protected product, or keeping it for disposal or otherwise, without the consent of the patentees: section 60 of the Act. In any action brought by a patentee alleging infringement the crucial underlying question must always be whether what the defendant is shown to have done has deprived the patentee of the full rights to which his patent entitled him.”

178. Mr Thorley contends that *United Wire* is not authority for the proposition that replacing one element of an invention which is claimed as a combination will always amount to making the patented product. Each case will depend on its own facts. He draws attention to Aldous LJ’s reference to “the nature of the invention as claimed” (approved by Lord Bingham) and Lord Hoffmann’s approval of the test “having regard to the nature of the patented article”. He submits that it is not enough to identify a part replaced as being a claimed part of the combination. He submits that whether or not this is so will depend on whether (a) the replaced part is one that is

expected to be replaced during the life of the product and (b) the replaced part represents or reflects the inventive concept of the patent. If these questions receive the answer “yes” and “no” respectively then there is a good case for saying that there is no new manufacture. The court has to balance the interests of the patentee against those of the user.

179. Mr Meade responds that these points are not open to Mr Thorley in the light of *United Wire*. As to the first, he says that the meshes in *United Wire* were expected to last only hours or a day at most, and therefore were expected to be replaced. The House of Lords did not regard this as a factor in favour of regarding the replacement of the mesh as legitimate. This aspect of the question can lead to a circular and somewhat unhelpful debate. Is the life of the device the life of the mesh, or the life of the assembly?
180. As to the second point, Mr Meade argued that one could infer from the facts of *United Wire* that their Lordships did not regard it as material to consider whether the part in the original article which was replaced embodied or reflected the inventive concept of the patent. Although the first patent was plainly directed to the features of the mesh (which was replaced by the defendants), the second was concerned with the frame. This must have been so, as the first patent was prior art to the second. He drew my attention to the fact that the defendants’/appellants’ printed case on the appeal sought to draw a distinction between the two patents on the basis that the second was principally concerned with the frame, which was not replaced.
181. I think it is tolerably clear from the judgments in *United Wire* that their Lordships rightly regarded the inventions in the case of both patents as concerned with the combination of frame and mesh, and that there was accordingly no scope for making a distinction between them on the basis of precisely where the invention or inventive concept lay: see for example Lord Hoffmann’s explanation of the inventions at [62] which draws particular attention to the way in which the frame tensioned the mesh, and at [73] where he refers to the attachment with adhesive according to the invention. The question of whether it would be possible to come to a different view if the invention lay principally or entirely in the part which was not replaced simply did not arise on the facts.
182. Finally Mr Meade says that the balancing of economic interests in the way suggested by Mr Thorley is not something the Court has previously recognised it should embark on other than in the clearest possible circumstances: see in particular Lord Hoffmann’s critique of the reasoning in *British Leyland v Armstrong* [1986] A.C. 577 in *Canon Kabushiki Kaisha v Green Cartridge* [1997] FSR 817 at 822-826.
183. Mr Meade suggested that the right question was:
- “When you take that component out, the one in question, can you realistically say that what you have left behind is a meaningful product and is it the meaningful product that the patent is describing?”
184. It is plainly the case that if one departs from a test such as this, one needs to ascertain the factors which are properly to be taken into consideration. In support of his submissions, Mr Thorley referred me to a number of cases decided in Germany,

where these questions have been addressed since the decision in *United Wire*. He submits that it is legitimate to do so because the relevant statutory wording in both England and Germany is derived from the same source, namely the Community Patent Convention. It is useful to review them because they demonstrate, to my mind, the very difficult questions which can arise if one starts to give weight to all of the factors which Mr Thorley invites me to have regard to.

185. The first of these cases was *Impeller Flow Meter* Case No X ZR 48/03, a decision of the German Federal Supreme Court (the BGH). The defendant sold measuring capsules for installation into the claimants' flow meters, which would be mounted on or in the wall of a building belonging to the customer to whom they were sold. The court affirmed the basic principle in the following terms:

“(i) It is true that the use of a patented product as intended also includes the maintenance and re-establishment of usability if the function or performance of the specific product is impaired or lost in whole or in part by wear or damage or on other grounds. However, there can no longer be a question of a re-establishment of the lost or impaired usability of a product put into circulation with the patent holder's consent if the measures taken in fact amount to making the patented product again.

(ii) Accordingly, the distinction between a (permissible) repair and a (prohibited) remaking depends on whether the measures taken maintain the identity of the specific patented product already put into circulation, or are the equivalent of the creation of a new product according to the invention. As a rule, this can only be determined in the light of the particular nature of the subject matter of the invention and a balancing of the conflicting interests.

186. After a discussion of earlier case law, the Court said

“Accordingly, the decisive factor for the distinction between use as intended and the making of the (new) protected object is always the total combination.

On the other hand, this does not mean that quantitative criteria alone would be relevant to the question of when the replacement of parts in a device constitutes newly manufacturing the device. Instead, it is necessary, while taking into consideration the uniqueness of the patented product, to weigh the protectable interests of the patent holder in the economic exploitation of the invention on the one hand and those of the buyer in the unfettered use of the specific inventive product brought onto the market on the other (citations omitted). When the interests are weighed, increasing importance can be given to whether it would be customary to expect the relevant parts to be replaced during the service life of the device (citation omitted). But what is also relevant is the

extent to which the technical effects of the invention are reflected by the replaced parts. Therefore, the replacement of a part subject to wear and tear that is usually replaced during the expected service life of the machine—sometimes repeatedly—does not usually constitute a new manufacture. The situation can be different, however, if this part in fact embodies essential elements of the inventive concept (citation omitted). When the replacement of this part again implements the technical or economic advantage of the invention, it cannot be said that the patent holder already reaped the benefits to which it is entitled from the invention when it brought the entire device into the stream of commerce for the first time (see also the question as to “whether, having regard to the nature of the patented article, the defendant could be said to have made it,” which was posed by Lord Hoffmann in the case of “*United Wire v. Screen Repair*” [House of Lords, ENPR 2000, 324]).”

187. The BGH concluded that the replacement of the measuring unit in the impeller flow meter constituted the making of impeller flow meter. The Court was plainly influenced by the extent to which the measuring unit interacted with the other features of the invention:

“The advantages of solution according to the invention are implemented on and in the corresponding measuring capsule”

188. It is fair to point out that this case, like the two others which follow, was concerned with a product which was still in the hands of the user and required a replacement in order to cause it to continue to function. The case was not concerned with a situation like *United Wire*, in which the defendant purchases a product at the end of its useful life, replaces parts and sells it on the market in competition with the patentee without returning it to the original user.

189. The second German decision relied on was *Wheel Tread* Case X ZR 45/05 dated 3rd May 2006. The patent was for a rail wheel. The Defendant made replacement treads which it supplied to the rail operator for installation onto its vehicles. Citing *Impeller* the BGH held at [17] that:

“When the interests are weighed, increasing importance can be given to whether it would be customary to expect the relevant parts to be replaced during the service life of the device. But what is also relevant is the extent to which the technical effects of the invention are reflected in the replaced parts”

190. The BGH went on to say that at [21] the facts only established a functional interaction between the wheel tread and the other parts of the invention, which was not adequate to characterise the replacement of the tread as manufacture of a new wheel. In this respect they distinguished their case from *Impeller*.

191. The third German case is *Pipette System* Case X ZR 38/06 of 27th June 2007. The patent related to a combination of a hand pipette and a syringe. The defendants were supplying replacement syringes for use in the claimants’ pipette holders. They were

thereby held to be supplying an essential means. However the BGH held that the finding that the syringe was an essential means for carrying out the invention did not exhaust the question of infringement. To become an essential means it was normally enough that the feature was specified in the claim (see [18]). However they held at [26(c)] that:

“Once the protected pipette system has been brought onto the market, the Plaintiff’s exclusivity right with respect to the unit brought onto the market consisting of hand pipette and syringe is exhausted even when the syringe is continually replaced – in accordance with the directions. Such replacement is in accordance with the designated use of the pipette system.”

192. Later they said this at [27 (aa)]:

“The distinction between (permissible) designated use and (impermissible) new manufacture is determined by whether the actions taken preserve the identity of the specific patented product already brought onto the market or whether they are equivalent to creating a new product in accordance with the invention”

193. The Court expressly rejected the Mr Meade’s proposed test at [28]:

“It is not sufficient ... for the assumption of a new manufacture that the “system” becomes incomplete due to the withdrawal of the syringe and therefore non-functional, nor by contrast is such an assumption refuted ... by the fact that no new item is manufactured based on generally accepted standards if a new (disposable) syringe is inserted into a hand pipette device intended for long-term use”.

194. The principles to be derived from these three German cases appear to me to be these:

- i) The question of whether a replacement of a part is “making” is not a purely quantitative one: it always depends on looking at the combination a whole: (*Impeller*);
- ii) At least in the context of on-site replacements, whether a replacement of a part is impermissible making or permissible repair depends on balancing the interests of the patentee against those of the user: (*Impeller, Wheel Tread, Pipette System*);
- iii) Importance will be attached to whether the replaced part can be expected to be replaced during the working life of the product: (*Impeller, Wheel Tread, Pipette System*);
- iv) But if the replaced part re-implements the invention (because it embodies the essential elements of the patented invention), even replacement of parts which would be expected to be exchanged can be “making”: (*Impeller, Wheel Tread*);

- v) A relevant consideration is whether the advantages of the patented solution are implemented on and in the replaced part (*Impeller*); or whether the technical effects of the invention are reflected in the replaced parts (*Wheel Tread*);
 - vi) It is also material to ask whether the identity of the product placed on the market is preserved: (*Pipette System*);
 - vii) The replaced part can be a feature of the claim and/or an essential means, but its replacement still not a making of a new product: (*Pipette System*);
 - viii) Mere functional interaction is not enough to make replacing the part the making of a new product: (*Wheel Tread*);
 - ix) Nor is it enough that without the replaced part the claimed system ceases to exist: (*Pipette System*)
195. There are aspects of the German law which are fully and expressly consistent with our own, further aspects which are inconsistent with our law and yet further aspects which develop propositions which are not yet fully developed here. I am bound to follow the English law as expressed by the Court of Appeal and the House of Lords, but free to develop it where not so constrained.
196. The difficult question, as it seems to me, is the case where the invention resides, or resides principally, in the part retained. This was not the case in *United Wire*. The reason this question gives rise to difficulty is that in such cases the defendant is not really making a new use of the invention at all. Mr Thorley gave the example of an inventive tennis racquet frame. The claim calls for a strung racquet coupled to the inventive frame. Does this prevent re-stringing, even though the invention is said to lie in the features of the frame alone? Instinctively one would say not. Does it make a difference if what the defendant does is buy second hand racquets, re-string them and sell them in competition with the patentee? Instinctively, I can see no reason why the owner of the second hand product should be making a new patented product when the original owner was not. Considerations such as these drive one to say that the relevant test ought to have regard to the part of the product in which the invention resides.
197. In my judgment the correct approach is to ask whether, when the part in question is removed, what is left embodies the whole of the inventive concept of the claim. I think that Mr Meade's approach, with its emphasis on the form rather than the substance of the claim, is too mechanical, and leads to results which are contrary to principle. I think that if one applies this test to the facts of *United Wire* one reaches the same conclusion because the inventions did not reside wholly in the frame or wholly in the mesh. It was a true combination.
198. I think this test gives effect to the principles explained in the English cases. It gives the patentee the full rights to which his patent entitled him (per Lord Bingham in *United Wire*). It has regard to the nature of invention as claimed (per Aldous LJ and approved by Lord Bingham) and has regard to the nature of the patented article (per Lord Hoffmann).

199. I do not think any of the ways in which the test is formulated in the German cases really solve the difficulty. To ask whether the advantages of the invention are reflected in the part replaced is a test which is difficult to apply. If an inventive propeller is claimed in combination with a boat, no doubt the advantages are enjoyed by the boat, but it cannot seriously be suggested that an owner of a patented propeller could not rebuild the boat to which it was attached, or transfer it to a new one. I would reject any reliance on a balancing exercise involving the respective interests of the patentee and the user: this would be to revert to considerations of implied licence, rejected by the House of Lords in both *United Wire* and *Canon*. A monopoly right should have clear boundaries, and the boundaries should not be forced backward by considerations derived from implied licence. Likewise the notion of whether the part is one which is likely to be replaced in the lifetime of the device: this again seems to me to rely on the notion of an implied licence and, as the German cases recognise, does not answer the question of whether there is “making” when the part itself embodies the inventive concept. Furthermore I do not find it useful to ask whether the identity of the patented product is preserved, unless by that one means whether parts embodying the whole of the inventive concept are retained.
200. It is perhaps worth noting as well that patent law has not infrequently taken note that it is the substance of the claimed invention, rather than the particular words which have found their way into a claim, which should inform the treatment of the subject. That was the approach taken by the Court of Appeal in relation to the difficult subject of entitlement to patented inventions in *Markem v Zipher* [2005] RPC 31; [2005] EWCA Civ 267 at [102] to [103]. As there, I would emphasise that it is the inventive concept as put forward in the patent with which one is normally concerned, not its inventiveness in relation to the state of the art. See also what Jacob LJ said in *Gerber v Lectra* [1995] RPC 383 at 396-7 about the relevance of the scope of the claim in relation to damages:

“Now claims can be framed in different ways which to some extent are fortuitous. In particular a patentee may frame a claim, particularly a subsidiary claim, more *narrowly* than is necessary. He may do this by including extra elements not really forming part of the invention.”

Facts

201. I have outlined Delta’s activities above. It is of course true to say, as the witnesses recognised, that for some purposes a combination of a used IBC cage and a new and different bottle is a new product. Thus, such a combination has to be tested and qualified again for the purposes of the regulations. The activity of reconditioning is sometimes referred to in the trade as re-manufacturing, including by Delta. Delta say on their website that:

“As a low cost alternative to new IBCs. Delta can supply re-manufactured containers. These IBCs are manufactured with once used cages fitted with new bottles.”

202. Mr Meade drew attention to some of the respects in which a cross-bottled IBC was different from the “all-Schütz” product:

- i) On the example in question the loops on the top of the bottle (which have a role in supporting it) have been removed. More importantly, even if they were present they would not fit the tie bars.
 - ii) The Werit bottle does not fit against the cage in the same way as a Schütz bottle would, because it has grooves which do not match the vertical bars on the Schütz cage. This will affect the way in which the IBC responds to vibration;
 - iii) The Werit bottle does not fit as well in the base or tray of the Schütz cage, resulting in less good draining.
203. So far as fillers and end users are concerned, it is normally the case that when their combination of cage and bottle can no longer be used, they expect it to be scrapped or sold to a reconditioner. Very little in the way of re-bottling is conducted by fillers or end users.
204. Mr Meade disputed that the evidence established that the invention was only in the cage. He said that IBCs were highly integrated products and that it was meaningless to talk about the cage on its own or the bottle on its own. He says that neither serves any meaningful function without the other. I think that puts the matter far too high. The cage is useful for supporting and protecting the bottle.
205. Mr Meade also draws attention to the undoubted fact that an IBC must cope with loads which are applied to the cage through or by the container, and that these “issues” are also reflected in the claims. Thus 307 refers to the inner side of the cage lying closely against the bottle, and 967 to alleviation of the forces. He relies on the fact that the problems addressed only arise when there is a bottle in the cage.

Conclusion on “making”

206. I have come to the conclusion that the activity of replacing the inner container of a Schütz IBC with a Werit bottle does not amount to making the patented product of claim 1 of either 307 or 967. It seems to me that the inventive concept of each of these claims is wholly embodied in the Schütz cage. Thus when the bottle is removed, the part retained embodies the whole of the inventive concept.
207. It is true that changing the bottle will mean that the forces between the cage and the bottle (and indeed the bottle and the ties or the bottle and the base) will be different: but that does not mean that the inventive concept resides partially in the bottle. In each case the invention is concerned exclusively with making a better cage. So much is clear from reading the patent.
208. I do not think that whether the trade calls the process “re-manufacturing” or not really changes this. Such observations cannot have any regard to where the invention lies. No doubt re-building a boat to which an inventive propeller was attached is called boat building or re-building. But that would not affect whether it was making the patented product. Likewise I do not think that the need for type approval, a need which arises for reasons of health and safety, has any bearing on the matter. Something may be a new product for one purpose and not for another.

Is the bottle essential means of either patent?

209. Neither party really focussed their submissions on this aspect of the case. This was understandable, because if what Delta do is not “making” then there is no primary infringement, and the supply of bottles by Werit to Delta cannot be intended to put the invention into effect. I think that the question of what amounts to a “means relating to an essential element of an invention” is a question which would be better decided in a case where it made a difference to the outcome, and with the benefit of full argument. For present purposes it is enough to record my provisional view that not every feature in the claim is necessarily an essential element of the invention.

Has Schütz exhausted its rights, or impliedly licensed Delta?

210. Werit, in the end, placed little reliance on these notions which, as the cases explain, have no real place in deciding a question of infringement by “making”. If what Delta do is not making, they do not need a licence, and do not need to rely on any doctrine of exhaustion.

Does Werit have a defence under section 44 of the Act?

211. Section 44 of the Act provides:

“(1) subject to the provisions of this section, any condition or term of a contract for the supply of a patented product or of a licence to work a patented invention, or of a contract relating to any such supply or licence, shall be void insofar it purports -

(a) in the case of a contract for supply, to require the person supplied to acquire from the supplier, or his nominee, or prohibit him from acquiring from any specified person, or from acquiring except from the supplier or his nominee, anything other than the patented product;

(b) in the case of a licence to work a patented invention, to require the licensee to acquire from the licensor or his nominee, or prohibit him from acquiring from any specified person, or from acquiring except from the licence or his nominee, anything other than the product which is a patented invention or (if it is a process) other than any product obtained directly by means of the process or to which the process has been applied;

(c) in either case, to prohibit the person supplied or licensee from using articles (whether patented products or not) which are not supplied by, or any patented process which does not belong to, the supplier or licensor, or his nominee, or to restrict the right of the person supplied or licensee to use any such articles or process...

(3) in proceedings against any person for infringement of a patent it shall be a defence to prove that at the time of the infringement there was in force a contract relating to the patent

made by or with the consent of the plaintiff or pursue or a licence under the patent granted by him or with his consent and containing in either case a condition or term void by virtue of this section...

(6) a condition or term of a contract or licence shall not be void by virtue of this section by reason only that it prohibits any person from selling goods other than those supplied by a specific person or, in the case of a contract for the hiring of or licence to use a patented product, that it reserves to the bailor (or, in Scotland, hirer) or licensor, or his nominee, the right to supply such new parts of the patented product as may be required to put or keep it in repair.”

212. “Patented Product” is defined in s 130(1) of the Act as being “a product which is a patented invention...” and “Patented Invention” means “an invention for which a patent is granted, which, by section 125(1), is that specified in the claims.

213. The mischief to which the section was directed was identified by Dunn L.J. in *Fischera v Flogates* [1984] RPC 257 at 289 as being:

“to prevent a patentee abusing his monopoly by placing restrictions on the acquisition and use of products other than patented products.”

214. The mischief is punished not only by providing that the term or condition is void, but also by preventing the patent from being enforced against anyone while the necessarily void restriction is “in force”.

215. Werit contend that at the date of some of the alleged infringements there was in force a contract relating to the patents in suit containing a condition or terms void by virtue of section 44 of the Act, and that, in consequence, they have a defence under section 44(3). The defence applies to acts committed prior to 23rd November 2009. On that date the agreement relied upon was replaced and Werit do not rely on the defence after that date. The provision in question was repealed by the Competition Act 1998 with effect from 1 March 2000, but remains in effect for any agreement made before that date.

216. The Protechna Agreement in question is a licence under the patents between the second defendant Protechna S.A. and Schütz. Under Article 2 it permits Schütz to assemble Parts and to use and sell Licensed Products throughout the Territory (which, by Article 1.3 includes the U.K.).

217. Article 1.4 of the Protechna Agreement defines “Parts”:

“Parts” means parts for intermediate bulk containers as produced by a manufacturing licensee or by Licensor which will be purchased by Licensee for assembling and sale of the Licensed Products

218. Article 1.6 of the Protechna Agreement defines “Licensed Products”:

“Licensed products” means intermediate bulk containers making use of the Patents and/or Know-How

219. The clause to which Werit object is Article 5.2, which provides:
- “ 5.2. Licensee agrees to purchase the Parts for assembling only from Licensor or from A-licensees.”
220. Werit submit that this is a term or condition of a contract which:
- i) requires the Licensee to acquire Parts from the Licensor or his nominee (i.e. the A-Licensees defined in Article 1.5.);
 - ii) prohibits the Licensee from acquiring Parts from anyone else;
 - iii) prohibits the Licensee from using Parts for assembly into Licensed Products which were not supplied by the Licensee or his nominee.
221. Accordingly Werit submits that as Parts are something other than the patented product, the prohibition in the section is infringed.
222. I think that as a matter of construction the contract simply requires Schütz to assemble their IBCs from Parts supplied by Protechna or their licensees. In practice this means that instead of supplying complete IBCs, Protechna supply collections of Parts for assembly. The question for decision is whether these collections of Parts are something other than the patented product.
223. Section 44 is concerned with abuse of monopoly. The elaborate consequences of including offending terms in the contracts to which it applies would not otherwise be justified. For my part I am unable to see why it should be an abuse of monopoly for a patentee to sell its product to a licensee in the form of a kit of parts rather than as an assembled product. When the section speaks of things other than the patented product, I believe that the draftsman had in mind the tying in of products such as consumables, or other unjustified extensions of the monopoly.
224. I would accordingly construe “patented product” in this context as including the patented product in kit form for assembly by the person supplied. I hold that a restriction such as that in the present case does not offend against the section. The restriction does not relate to something other than the patented product. On the contrary it is simply a requirement that the patented product be acquired from the patentee or his nominees, albeit in the form of the constituent parts.

Conclusions

225. 307 is valid, but not infringed (a) because the Schütz cage does not have the feature of “common tangential planes” and (b) because Delta do not “make” the patented product of 307.
226. 967 is valid but not infringed because Delta do not make the patented product of 967.
227. The section 44 defence fails.