



BL O/188/04

2 July 2004

PATENTS ACT 1977

BETWEEN

Michael Wayne Crabtree

Claimant

and

Ralph Barclay Ross

Defendant

PROCEEDING
S

Reference and application under sections 8, 10, 12, 13 and 37 of the Patents Act 1977 in respect of patent application numbers GB 9901474.8 & PCT/GB 00/00176, UK patent GB 2363373 B and other corresponding foreign applications

HEARING OFFICER R C Kennell

DECISION

Introduction

- 1 UK patent application no GB 9901474.8 (the **A**priority application[®]) was filed on 23 January 1999 naming Michael Wayne Crabtree and Ralph Barclay Ross as co-applicants and co-inventors. International patent application no PCT/GB 00/00176 (the **A**joint PCT[®] application) was filed on 24 January 2000, claiming priority from GB 9901474.8, naming Mr Crabtree and Mr Ross and co-applicants and co-inventors and published as WO 00/43295. It entered the national phase in the UK as GB 0118088.4 (the **A**joint UK[®] application) and was subsequently granted as GB 2363373 B; and also, it appears, in the USA as 09/889334 where it is still pending.
- 2 GB 2363373 B names Mr Ross as the sole proprietor and Mr Crabtree and Mr Ross as co-inventors. This arises because, on filing the joint PCT application, Mr Crabtree and Mr Ross were named as co-applicants for all designated states, but a correction was made at the instigation of Mr Ross in the international phase to name Mr Crabtree as the sole applicant for

the US only and Mr Ross as sole applicant for all other states. Mr Ross says that he thought this reflected their joint intentions but Mr Crabtree disputes this. This correction was accepted by the UK Office when the PCT application entered the national phase and had the effect of deleting Mr Crabtree as co-applicant although he remains co-inventor.

3 On 1 July 2002, Mr Crabtree filed the present reference through his patent agents, R G C Jenkins & Co. Mr Ross filed a Counterstatement on 30 August 2002 through his patent agents Cruikshank & Fairweather. Thereafter the case proceeded through the usual evidence rounds. Amendments were also made to the parties' statements of case to address issues surrounding the filing of the joint PCT application, to take into account the grant of the joint UK application and to update the position on various foreign applications derived from the joint PCT. A preliminary issue concerning the provision of security for costs by Mr Crabtree in view of his domicile in the US having been resolved, the matter came before me at a hearing on 24 and 25 February 2004 at which Mr David Musker of R G C Jenkins & Co acted as agent for the claimant and Mr Richard Davis instructed by the patent agents Cruikshank & Fairweather appeared as counsel for the defendant. The amended versions of the pleadings before me at the hearing were the statement filed on 13 February 2004 and the counter-statement filed on 20 March 2003. Both sides provided me with skeleton arguments before the hearing.

4 Reference had originally been made under section 8 in respect of GB 0118088.4, but by virtue of section 9, it was treated as though it had been made under section 37 following the grant of patent GB 2363373 B. It was agreed at the hearing that the reference should remain under section 8 in respect of GB 9901474.8.

5 A complicating factor in these proceedings is that because of the falling out between Mr Crabtree and Mr Ross, Mr Crabtree has filed a series of patent applications for the invention in his sole name. The result is that two patent families exist - which I shall refer to as the Joint and the Crabtree applications and patents - that cover very similar ground although the claims are not identical. The Crabtree family comprises a United States application filed on 12 January 2000 and since granted as US 6182837 B1; international application no PCT/US00/00887 filed on 13 January 2000 claiming priority from the US application and from GB 9901474.8, and published as WO 00/43235; and the applications derived therefrom. These appear to be limited to UK application no GB 0118036.3 now granted as GB 2361909 B and a pending Singapore application. Whether these applications and patents should be in issue is a matter of dispute between the parties, but it does not appear to have been raised in the preliminary stages of the proceedings.

The invention

6 It will be helpful at this stage to outline the main features of the invention. It relates to apparatus for handling elongate objects, especially drill pipe and downhole tubulars for drilling boreholes at an offshore location, which uses packing members i.e. spacers mounted in a frame to sandwich and constrain the pipes against movement. As explained in the joint applications, frames for storing and transporting pipes are known in which spacers are profiled to co-operate with tubular lengths of a particular diameter, but this does not allow a variety of diameters to be accommodated without retaining an extensive inventory of spacers. This is expensive in offshore

operations, where differing pipe diameters are routinely encountered, and the cheaper but less safe option of bundling pipes with wire rope slings has therefore been commonly used.

- 7 Typically, the frame comprises a pair of uprights mounted on a base and packing members extending between the uprights at any convenient height or spacing depending on pipe diameter. The packing member comprises elastomer bonded to a rigid interior element that resists deflection or bending parallel to cargo pipe length. The elastomer exterior surface profile enables this packing member surface to locally deform at points of contact with cargo pipe and thus handle a range of cargo pipe diameters. The frame also includes some method of compressing the top packing member downward toward the base beam to engage the pipes and some means of maintaining the relative horizontal distance between upright pairs. The function of the elastomer is explained as follows in the statement at paragraphs 3.6.6 - 3.6.8:

A3.6.6 The exterior portion of each packing element has one or more physical adaptations that generate a restraining force in response to the movement, over the packing member, of an elongated object. This movement can be due, for example to the pitching of the deck of a vessel on rough seas. The force that is generated by the packing member opposes motion of the object and advantageously increases in magnitude as the object starts moving across the packing member. This increasing force rapidly overcomes the force urging the elongate object to motion, thereby stopping the object.

3.6.7 In the illustrative embodiments the physical adaptation of exterior portion that generates the restraining force is its profile. In particular, the surface profile results in a regionally-variable compression of the resilient exterior portion as an object moves over it. In response to the regionally-variable compression, the resilient exterior portion exerts a force against the constrained (but moving) object.

3.6.8 In the illustrative embodiments, the regionally-variable, compression-causing configuration comprises a Non-uniform object-receiving surface. In the context of the application, Non-uniform object-receiving surface means a surface profile that is characterised by one or more features that, collectively, disrupt the uniformity of the contact surface of the packing member.

- 8 A variety of profiles are described and claimed in the various applications and patents: see for example the following claims of the joint PCT application:

A1. Apparatus for packaging elongate members, the apparatus comprising; a frame comprising a base and side members; at least one packing member having a deformable portion for engaging elongate members to be handled; and means for retaining the packing member in contact with the elongate members.

....

19. The apparatus of any of the preceding claims, wherein the packing member comprises a rigid section.

20. The apparatus of claim 19, wherein the packing member comprises a rigid centre section.

21. The apparatus of claim 19 or 20, wherein one or more deformable elements is fixed to the rigid section.

22. The apparatus of claim 21, wherein the deformable element is in the form of an elastomeric

jacket.

23. The apparatus of claim 22, wherein the elastomer jacket defines vertical profiles on either side of the rigid section shaped to facilitate elastomer displacement with increasing vertical compression.

24. The apparatus of claim 23, wherein the elastomer jacket defines displaceable lobes, upper and lower lobes on each side of the jacket being vertically movable.

25. The apparatus of claim 24, wherein the elastomer jacket defines side lobes and a central section, with one or more channels between the central section and the side lobes.

26. The apparatus of any of claims 22 to 25 wherein the elastomer jacket defines angular edges that are adapted to exert increasing compressive resistance to elongate member lateral motion with increasing applied vertical force.®

(The claims of the patent as granted from the joint UK application are of more restricted scope. Claim 1 reads:

A1. Apparatus for packaging elongate members, the apparatus comprising: a frame comprising a base and side members, at least one packing member adapted to extend between the side members of the frame and engageable with the frame, the packing member having a rigid centre section with a deformable portion in the form of an elastomer jacket fixed thereto for engaging an exterior surface of elongate members to be handled; and means for retaining the packing member in contact with the elongate members, wherein the elastomer jacket defines vertical profiles on either side of the centre section shaped to facilitate elastomer displacement with increasing vertical compression.®)

The pleaded case

9 On the pleadings Mr Crabtree's case is that he is the sole inventor and owner of the subject matter claimed in the patent applications (paragraph 3.6.1 of the statement), although paragraph 2 of his own evidence in reply states 'The inventive concept of the pipe handling product is its ability to accommodate pipes of various diameters, whereby the pipes are held by cross-members with an elastomer coating stabilizing the pipes in their position.' Mr Ross's case is that he and Mr Crabtree are joint inventors and owners, and paragraph 9 of his counter-statement says that he was of the opinion that a pipe lifting frame including slat-like spacers and threaded tension rods was already known, and that he did not consider Mr Crabtree's initial proposals to be distinct in the market place. He proceeds on the basis (see paragraph 49 of the counter-statement) that he and Mr Crabtree jointly co-operated in the development of the invention from an initial incomplete concept provided by Mr Crabtree to a final workable form.

10 The counter-statement does not offer any clear view as to what precisely Mr Crabtree might have invented, but Mr Davis said at the hearing that his primary argument was that this was all about the 'profile invention' and that was a joint conception between Mr Crabtree and Mr Ross. As he stated in his closing speech, in relation to the priority application

'Most of the drawings came from Mr Ross, but at least there was one drawing, the figure 12 ... that probably came from Mr Ross but it was insisted that it went in for Mr Crabtree. So I would submit that the priority application is quite clear. This is a collaborative effort.'

- 11 The statements appear to proceed on the basis that there is a single inventive concept (it is always mentioned in the singular), but this was thrown into some doubt by the way in which Mr Musker argued his case at the hearing, identifying a number of distinct inventive concepts and seeking to establish who invented each. I refer to this matter later in the decision.
- 12 It is however common ground that, irrespective of whether it would work or whether Mr Crabtree had reduced, or could reduce, it to practice, he had come to Mr Ross with the idea of a combination of frame and elastomer-coated packing members, with the elastomer jackets being of square or circular cross-section. It is apparent that the dispute, as pleaded, really centres around what took place between Mr Crabtree and Mr Ross after that in relation to the development of surface profiles and the manufacture of the frames.

Arguments advanced at the hearing

The inventive concepts of the applications and patents

- 13 Notwithstanding the statements and evidence apparently proceeding on the basis that there was a single invention or inventive concept, Mr Musker sought in his skeleton argument to break the claims of the applications and patents into a number of inventive concepts and identify who devised in the applications and patents and who devised each one. In support of this Mr Musker took me to a number of authorities in which the issue of inventorship arose. To some extent this approach would appear to have been prompted by the recent reporting of *Markem Corporation v Zipher Limited (No 1)* [2004] RPC 10 setting out a number of principles for determining entitlement and inventorship
- 14 Mr Davis objected that Mr Musker's approach broadened the scope of the pleadings and since it was an issue on which both sides must adduce evidence then it could not be raised at this late stage. As he put it, the pleaded case was that the invention was the shape of the profile, and if Mr Musker's case now was that Mr Crabtree was entitled to the entire patent even though only the narrow concept (presumably the profile invention) was patentable, then Mr Davis should be entitled to put in evidence as to lack of reduction to practice by Mr Crabtree. Whilst it seemed to me that there might be some force in Mr Davis's point about the proceedings being broadened, nevertheless I took the view that the matter was not so clear cut as to warrant adjourning the proceedings (which would have put the parties to the considerable expense of a re-convened hearing at a later date), and that I should allow Mr Musker some leeway to argue his case, particularly in the light of *Markem v Zipher*, but of course taking care not to decide any points on which the parties had not both had an adequate opportunity to submit arguments and adduce evidence. I will return later in this decision to the authorities cited by Mr Musker.
- 15 Mr Davis helpfully made two concessions, first, that he was prepared to accept that Mr Crabtree conceived the idea of the frame/packing member combination before he met Mr Ross (but he did not concede that Mr Crabtree could get it to work) and, second, that if I found that the only thing that Mr Ross invented was the forklift pocket, then Mr Ross had no rights in any of the applications.

The Crabtree applications and patents

16 I have mentioned the existence of the separate ACrabtree@family of inventions. The reference and application are not formally made on Form 2/77 in respect of these applications, but the defendant in his counter-statement sought, in the event that both parties were found to be joint inventors and/or joint owners of the invention, either appropriate amendment of the Crabtree applications or an order allowing the defendant to exploit the invention. In view of the uncertainty as to whether the Crabtree applications formed part of the reference and application, at the hearing I sought the views of the parties as to whether I could give relief in respect of them. Mr Musker contended that the defendant ought to have filed Form 2/77 if he wished to challenge entitlement and inventorship in respect of the Crabtree applications. Mr Davis on the other hand thought the patents were effectively in issue, and suggested in the light of the decision of the comptroller in *Hartington Conway Ltd's Patent Applications* [2004] RPC 6 that I could simply treat this as an irregularity and correct it under rule 100 of the Patents Rules 1995 without requiring a further Form 2/77.

17 I think that *Hartington Conway* differs from the situation before me in that the parties there were in agreement that the omission made no real difference to the outcome and it was rather an inadvertent oversight that could simply be corrected. Here there is no meeting of minds as to what is in issue, and in any case the claims in the Crabtree family on the face of it differ considerably from those in the joint family, and may embrace constructions which the joint family exclude. I do not therefore consider the Crabtree family to be within the scope of the present reference and application.

18 Nevertheless, I do not think that it would be sensible to go as far as Mr Musker suggested, because manifestly any finding that I make in respect of the joint family is likely to have relevance to the Crabtree family. The parties in fact agreed at the hearing that the way forward might well be for me to make a finding on inventorship and then invite submissions as to the form of order to be made, as this might enable the parties to come to some agreement between themselves as regards the overlapping families of patents and patent applications. I agree, and will proceed accordingly.

Estoppel

19 Mr Davis thought that if even if I were to find in favour of Mr Crabtree, he was estopped from claiming sole inventorship and ownership. I deal with this below.

Evidence

20 The evidence filed on behalf of Mr Crabtree comprises a witness statement from Mr Crabtree himself with a long series of supporting exhibits which illustrate the development of the invention and the collaboration with Mr Ross; a witness statement from Mr Wayne Breyer, Mr Crabtree's US patent attorney; and a further witness statement from Mr Crabtree in reply to the defendant's evidence.

21 I also note that the statement of case as originally filed (although not later amended versions) is

accompanied by a Statement of Truth signed by Mr Crabtree, and the question arose at the hearing whether this statement therefore constituted evidence. I noted that this did not appear to be a settled matter, and drew the attention of the parties to the Patent Office's view as stated in the Patent Hearings Manual at paragraph 3.69:

Because our rules require evidence to be by statutory declaration, witness statement or affidavit, it is doubtful whether a verified statement of case can be used as evidence in proceedings before the comptroller.

Accordingly I do not propose to treat this statement as evidence, but I will nevertheless take its contents at face value, insofar as they are not superceded by later amendments or by what has actually been filed as evidence.

- 22 Evidence filed on behalf of Mr Ross comprises a witness statement from Mr Ross himself with supporting exhibits.
- 23 Mr Crabtree and Mr Ross were each cross-examined on their witness statements, and thus the resolution of the dispute depended to a large measure on how their different versions of events stood up under cross-examination. Before dealing with this, it will be helpful to explain at some length the events leading up to the present proceedings, to pinpoint where the differences lie.

History

- 24 As appears from the pleadings and the evidence, and from chronologies helpfully submitted by Mr Davis and Mr Musker for which I am grateful, whilst there is considerable disagreement over many of the details, there is broad agreement about the main sequence of events. Mr Crabtree, a US citizen trading under the name CargoMax, was employed in the offshore oil drilling industry as a material control supervisor by Diamond Offshore Drilling, a US company, and had been relocated to Aberdeen in June 1996. He says that having witnessed the difficulties in the handling of pipes which are mentioned above, he had been working on his own account on an improved pipe frame since 1995, and that by the end of January 1998 he had come up with the design described above.
- 25 As is clear from the exhibits to his witness statement, by July 1998 Mr Crabtree's design had been certified for offshore use by Det Norske Veritas, who had given him a price for a type approval, and he had provided loading calculations for the frame to a mechanical engineer, Mr Danny Sinanikone of Rig Engineering in Aberdeen. He says that all he now needed was advice on what elastomer to use for the packing member.
- 26 Mr Ross is the managing director of R B Ross Steel Fabrications Ltd (R B Ross), a firm of general fabricators in Aberdeen employing 20 or so people. Although he had not previously met Mr Ross, Mr Crabtree says that he was aware that one of R B Ross's products was a mud bucket, a device used to prevent spillage of oil well drilling fluids as drill pipe is removed from the well. He therefore expected that Mr Ross's experience with the elastomeric seals used in these products would be helpful with the selection of materials for the packing members in the pipe lift frame. Mr Crabtree said he told Mr Ross that he had invented a new type of pipe frame

that, unlike other products the market, could be used with a range of cargo pipe diameters instead of only a single diameter, that he needed help in selecting a suitable elastomer, and that he was interested in a possible agreement under which R B Ross would fabricate the product. To show he was serious, Mr Crabtree faxed Mr Ross the anticipated load capacities for the new pipe frame (Exhibit 26 to his witness statement). Mr Crabtree says that he then met Mr Ross at his company on 2 October 1998.

27 What happened at that meeting is disputed. Mr Crabtree's version of events is that Mr Ross was interested in working with him and suggested that they should talk to Mr Bob Spark of Rubber & Plastics Industries (who made the seals for R B Ross's mud buckets) for advice on the elastomer. Mr Spark said that he could not help Mr Crabtree without a better understanding of how the elastomer was to be used. Mr Crabtree says he hesitated, as neither man had signed a non-disclosure agreement, but decided to trust them. He then described the packing member and the need for a chemically resistant outer surface to deform to the diameter of pipe in contact with it. He also described how the internal member was to be rigid, with a bonded or extruded outer covering and was placed in vertical channels to accommodate the pipes. Mr Spark stated that his company had had good success with urethane compounds for mud bucket seals. Mr Ross asked what surface profiles Mr Crabtree had examined and he told Mr Ross that he had considered round and flat ones. Mr Ross then stated that, in his experience with the Mud Bucket seals, a ledge provided a better bite on the pipe. Mr Crabtree says that he did not go back to Mr Ross's factory, but left it that he would contact Mr Ross and went home.

28 Mr Ross's version of the meeting differs in a number of respects. When Mr Crabtree explained his ideas in more detail, Mr Ross says he became concerned over the viability of certain aspects, particularly the use of square-section hollow bars coated with elastomer which Mr Crabtree was proposing. Based on his experience with steel design and manufacture and on the use of elastomers in the oil industry, Mr Ross says he believed that there would be difficulties in use. Firstly, elastomer along a long flat vertical section of a bar would be liable to cleave when subject to a compressive force along the section: that is, a section of the elastomer would peel away from the underlying bar. Secondly, he did not believe that a planar layer of elastomer would provide sufficient bite against a pipe section to secure the pipe section safely. In the light of that experience, Mr Ross says he identified that the bite of the elastomer would be improved by providing an angled or profiled section of elastomer for contact with the pipe, such that horizontal force on the pipe is not simply opposed by friction with a planar elastomer surface. He also knew that a profiled section could be used as a mud scraper to remove contaminants from a drill pipe section such as mud and oil which would otherwise reduce friction. He also considered that the problem of cleave could be avoided by reducing the height profile of the bars; that is, by using flattened solid bars rather than square-section hollow tubing. After talking to Mr Spark, Mr Ross says that he and Mr Crabtree then returned to his premises where Mr Ross drew a brief sketch to illustrate the concepts of flattened bars and profile elastomer. This is denied by Mr Crabtree.

29 Mr Crabtree says that Mr Ross's comment on the packing member elastomer surface profile lit up the light. He says he as a result of this he drew a revised packing member surface profile on 4 October and sent the sketch to Mr Ross on 7 October, and that his design was then essentially complete, including a more effective packing member than in previous sketches. (The sketch

constitutes Exhibit 27 to Mr Crabtree's witness statement, and also corresponds to Figures 7 and 8 of the Crabtree family of applications.) In contrast, Mr Ross asserts that the revised sketch incorporated his suggestion of the profiled elastomer although it still retained the square section beam. Mr Ross says that he did not consider these sketches would be practical and that the layer of elastomer shown was too thin to work satisfactorily. He considered that further development would be necessary before a functional pipe-handling product could be produced and he worked on designing appropriate profiles over the period subsequent to the initial meeting. He did not believe this would be a controversial step to take and asserts that Mr Crabtree solicited his skills in the design and fabrication of the cross members.

30 There were further meetings between Mr Crabtree and Mr Ross at which Mr Crabtree provided further details about his designs and a partnership agreement was discussed. Mr Crabtree says he did not have the resources to set up as a manufacturer. He therefore proposed a royalty agreement that would enable Mr Ross to develop the market, but Mr Ross did not think this would be practical since he was only interested in certain geographical areas and wanted each of them to be restricted to his own selling area. Mr Crabtree says he could only accept this subject to specific conditions for joint design control and branding to ensure product uniformity and brand recognition. Otherwise, Mr Ross could change the design and customers would be forced to buy replacement components from Mr Ross.

31 However, Mr Ross says that he proposed formal division because Mr Crabtree was primarily interested in producing the pipe frame for the US market while he was more interested in the European market because of his existing business contacts and manufacturing capability. Mr Ross says that at that time discussions were based on a joint ownership of the intellectual property in the frame, and he had no reason to believe that this was a controversial issue for Mr Crabtree.

32 Over November and December 1998, Mr Ross says that he began preparation of a prototype frame and made a number of modifications to Mr Crabtree's concept, including his own work on elastomer profiles and bar shapes, and various frame features including a cloverleaf opening through the bars, a hammerhead end profile for the cross members to allow them to be locked into a C-section upright member, and an adaptation to enable the frame to be movable by fork lift truck.

33 At the beginning of December, Mr Ross informed Mr Crabtree that he had completed a prototype. Mr Crabtree says he was furious that Mr Ross had not informed him that he was working on the design or consulted him on design approaches, and expressed concerns that the prototype did not have adequate strength and would meet market resistance. In particular, he felt that Mr Ross's use of a flat bar would result in the packing members bending under load. Although Mr Crabtree says that Mr Ross had not asked for his approval to spend any money on development, and no written agreement or commercial terms existed, he nevertheless felt he had no alternative but to pay the \$10,000 which Mr Ross said was his share of the cost in order to protect his position, otherwise Mr Ross would own the prototype outright.

34 In contrast, Mr Ross says that it had been assumed that he and Mr Crabtree would share the costs of development of the frame. He therefore subsequently invoiced Mr Crabtree for his

share of the prototype construction. He alleges that Mr Crabtree's sketches dated 8 January 1999 simply incorporated aspects from the prototype including the use of a flat beam for the cross member even though Mr Crabtree says that he did not believe it would work satisfactorily. (As regards payment, I note paragraph 4.3.4 of the statement, which says that Mr Crabtree paid the money 'As agreed'.)

35 Despite serious misgivings about what Mr Ross was doing, Mr Crabtree says that after viewing the prototype, and in order to protect his interests, he drew up an agreement (Exhibit 43 to his witness statement) based on a geographical split as proposed by Mr Ross but including Mr Crabtree's conditions on joint branding and joint design control. The preamble to paragraph 2 of this draft (to which each side referred at the hearing) reads:

'Whereas a Pipe Frame product design initiated, researched and devised by Michael Crabtree has been jointly further enhanced, refined and developed with Ralph B Ross ...'

36 Mr Ross says he was generally happy with this and was willing to file a patent application first with a view to concluding the discussions on a formal agreement in the future. Mr Crabtree was about to relocate to Brazil and says that, even though he felt the terms he had proposed were necessary to protect his position, he felt that arguing over the agreement would not be fruitful: if he did not proceed with the patent filing he would be left with no protection. He therefore wrote the description of the invention which he gave to Mr Ross, and continued to send Mr Ross sketches of the frame and packing member in December and January - despite his stated ill-feeling towards Mr Ross.

37 In January 1999, Mr Crabtree, his wife and Mr Ross met Mr Jamie Allen of the patent agents Murgitroyd & Company to discuss a UK filing. Mr Crabtree says that prior to this meeting, he and his wife had decided to force Mr Ross's hand, Mr Ross having become increasingly insistent that he wanted only the Ross name on the frames and that joint design control would not be workable because it would hinder his ability to respond to customer modification requests. At the meeting, Mr Crabtree says his wife suggested that since Mr Ross was not agreeing to the terms then perhaps the filing should not proceed. He says there was an argument between his wife and Mr Ross, and Mr Allen stated that perhaps the filing should not go ahead since there appeared to be unresolved issues. Mr Crabtree says that Mr Ross capitulated stating, in Mr Allen's presence, that he would come to agreement with him, as a result of which Mr Crabtree instructed Mr Allen to proceed with the UK filing. Mr Ross on the other hand says he has no recollection of any argument taking place during the meeting with Murgitroyds.

38 Following the filing of the UK patent application, Mr Crabtree left Aberdeen on 5 February 1999 to take up his new job in Brazil. Mr Ross says he continued to develop and market the frame on the basis of the informal agreement and did not conceal these activities from Mr Crabtree. Mr Ross says he sent a fax on 11 February 1999 proposing changes in the terms including dropping the CargoMax name, but Mr Crabtree says that he stood by the terms in place at the time of the UK filing and says that Mr Ross began marketing the product solely under the Ross brand name and making design changes without Mr Crabtree's knowledge or permission.

39 In September 1999, Mr Ross received a letter (Exhibit RBR2 to his witness statement) from Mr

Crabtree's US patent attorney, Mr Wayne Breyer, enclosing a draft for a joint US patent filing based on the UK patent application. Mr Ross says that he reviewed and commented on the draft as requested, noting that the US application included drawings of beams and elastomer profiles based on profiles that he had designed. Mr Ross received a further letter from Mr Breyer in November 1999 (Exhibit RBR3) seeking Mr Ross's signature to a declaration and power of attorney form, and to an assignment of the US application. Mr Ross says that he signed the first form as a co-inventor of the pipe frame but was unwilling to complete the assignment because it purported to transfer all rights in pipe frame in various jurisdictions to CargoMax (Mr Crabtree's company) without corresponding transfer for the rest of the world from Mr Crabtree to Mr Ross - as he saw it a key part of their earlier discussions on exploitation and contrary to their informal agreement.

- 40 As the UK priority application approached the 12 month deadline for foreign filings, Mr Crabtree was contacted (his Exhibit 39) by Murgitroyds - who were aware that he had retained his own patent attorney - to get his permission to act for Mr Ross alone in the filing of a PCT application. Mr Crabtree says that he refused this (Exhibit 40), and so Murgitroyds withdrew. Mr Ross says that, not knowing if Mr Crabtree intended to proceed with patent protection outside the US, he instructed Cruikshank & Fairweather, another firm of patent agents, to prepare and file an international patent application (the joint PCT application) based on the UK application, naming Mr Ross and Mr Crabtree as joint inventors: his intention was to protect his rights in the event that Mr Crabtree had allowed the chance to seek patent protection to pass.
- 41 Mr Crabtree says that, in anticipation that Mr Ross was not going to agree terms, he instructed Mr Breyer to revise the earlier draft and prepare a US patent application and PCT application naming him (Mr Crabtree) as sole inventor. Mr Crabtree says that he tried to allow the UK priority application to expire but later learned of the filing of the joint PCT application.
- 42 Exhibits 37 and 38 to Mr Crabtree's suggest that Mr Ross e-mailed Mr Crabtree on 9 August 2000 to discuss developments, and Mr Crabtree wrote to Mr Ross on 10 August 2000 trying to reach agreement with Mr Ross for him to buy the rights in the invention but received no response. Mr Ross says he subsequently found out that Mr Crabtree's US and PCT applications named Mr Crabtree as sole inventor, and it was therefore clear that they would be unlikely to reach a mutually satisfactory agreement. Mr Ross therefore instructed his patent agents to continue with the international patent application in the US, although this was not part of his originally allocated market, to protect his rights in the event that Mr Crabtree and others tried to exploit the invention in the US. He also instructed his agents to proceed with a UK application to protect his manufacturing business in this country and as a safeguard against Mr Crabtree seeking UK protection based on his own PCT application.

Relevant statutory provisions

- 43 Sections 8(1) and 37(1) of the Patents Act 1977 give me the power to determine entitlement to a UK patent application prior to and after grant, respectively. Section 12(1) is in similar terms to section 8(1) and covers *inter alia* applications made under international conventions: this would include the joint PCT application. All of these three sections give the comptroller the power to make such order as he thinks fit to give effect to his determination. However, section 12 has two

important qualifications - first, it can only be invoked at any time before a patent is granted in pursuance of a foreign application or an application under an international convention, and, second, it requires the comptroller to determine the question as far as he is able to. For any foreign applications deriving from PCT applications I therefore have no jurisdiction to make any order in respect of granted patents, and in respect of pending applications I may need evidence of the appropriate foreign law if I am to make an effective order.

44 As regards inventorship, by virtue of the definition of a patent in section 130(1) section 13 applies only to patent applications and patents that have followed the UK national route. Any finding of fact that I make on inventorship as regards foreign applications and patents will not have any binding effect.

45 Section 10 enables me, in the event of a dispute between joint applicants about how a UK application should proceed, to give directions to enable it to proceed in the name of one or more of the parties, or to regulate the manner in which it should proceed, and the first limb of this applies also to foreign and PCT applications by virtue of section 12(4).

46 I should also mention section 7 which concerns the right to apply for a patent and the right to be granted a patent. Bearing in mind the wording used in the draft agreement drawn up by Mr Crabtree, section 7(3) is particularly relevant since it defines the inventor as the *actual deviser* of the invention.

47 Section 7(4) makes a presumption, except so far as the contrary is established, that the person or persons who make an application for a patent shall be taken to be the person or persons who are entitled to be granted a patent. It follows from this that, since all the joint applications and patents were made in the joint names of Mr Crabtree and Mr Ross, the onus is on Mr Crabtree to prove his case on ownership on the balance of probabilities.

Examination and assessment of witnesses

48 As previously explained, Mr Crabtree is seeking sole inventorship and ownership, while Mr Ross is seeking no more than joint inventorship and joint ownership. Although some of the arguments advanced by Mr Davis at the hearing in responding to Mr Musker's arguments disputed whether Mr Crabtree had made anything workable - and indeed hinted that Mr Ross could even have a claim to sole inventorship - there is no suggestion in the pleadings that Mr Ross is the sole inventor and owner. It is therefore for Mr Crabtree to prove on the balance of probabilities that he is the sole inventor.

49 Both Mr Crabtree and Mr Ross were subject to challenging cross-examination on their witness statements at the hearing. As explained above, their written evidence is contradictory and it is not corroborated on either side. My decision will therefore turn on the reliability of their oral testimony.

50 The detailed sketches with explanatory annotations which are exhibited to Mr Crabtree's witness statement to document his development process suggest a careful and methodical approach, and this was indeed borne out in the witness box. Mr Crabtree struck me as being a very controlled

person: he answered Mr Davis's questions clearly and stuck to his story. He resisted being pressurised into saying something he did not intend. His answers seemed to me careful and calculated rather than spontaneous - particularly in response to probing questions about his involvement with the drafting of the patent applications, whether he had anything more by mid-1998 than a very general concept of the frame, the meaning of 'a profile' and whether a circular cross-section of elastomer could be regarded as profiled.

- 51 However, I was not convinced by his version of events following his involvement with Mr Ross. In the absence of any corroboration, his version of events seems highly implausible. For example, I find it hard to believe that in a single day, he came up with fully-fledged proposals for the non-uniform profiles following the 2 October 1998 meeting having had the inspiration solely from Mr Ross's verbal comments on sealing rather than clamping and having no experience of working with elastomers. I also find Mr Crabtree's explanation under cross-examination of his conduct following the revelation of the prototype quite astonishing. What I am asked to believe is that, rather than risk a blazing row, and despite serious worry that he had lost control of his invention, Mr Crabtree visited Mr Ross's factory, photographed the prototype to find out whether it would be acceptable, followed this up with further sketches with the words 'advise if you need more info' (Exhibit 31), paid Mr Ross the £10,000 for the prototype - and wrote detailed notes to himself in the form of a letter to Mr Ross (Exhibit 34) to vent his frustrations rather than speaking direct to Mr Ross. I was also not convinced at Mr Crabtree's explanation at why he did not just go ahead and file his own patent application if he was concerned to protect his own interests (something he has shown he is perfectly capable of), ie that it was simply because he lacked any suitable drawings until Mr Ross sent him his drawings.
- 52 Finally, I was not satisfied that Mr Crabtree showed a genuine understanding of the technical issues involved in the development of surface profiles beyond the square and circular. In particular, I found his explanation, when pressed under cross-examination by Mr Davis, of the phenomenon of 'cleave' as something to be increased between lobes of the elastomer profile (see the sketch in Exhibit 28 and also paragraph 4.1.27 of the statement) unconvincing. I find it difficult to avoid the inference that Mr Crabtree simply reproduced something that Mr Ross had said about preventing the elastomer from cleaving from the inner rigid section, but without fully understanding it. This is reinforced in my view by Mr Ross's counter-statement at paragraph 11, which has not been denied, where Mr Ross says that Mr Crabtree would take notes of proposals made by Mr Ross at their meetings which he would sign and date.
- 53 I did not therefore find Mr Crabtree a satisfactory witness and as a result I do not think I can place much reliance on his version of those events which are in dispute. At the conclusion of Mr Crabtree's testimony, Mr Davis made a submission based on *Markem v Zipher* that there was no case for Mr Ross to answer because Mr Crabtree had effectively admitted that the only person who effectively enabled the invention and reduced it to practice was Mr Ross, and that only with Mr Ross did he have an adequate 'package' for patent protection. Mr Musker unsurprisingly disagreed, pointing out that Mr Crabtree was 'ready to go' on the basis of what he had done, and that whether he thought he was ready to file a patent application was not evidence of whether he in fact was. I did not accept Mr Davis's submission that there was no case to answer.

- 54 Turning now to Mr Ross, he was not at all comfortable under cross-examination and was visibly nervous, not necessarily in my view for any suspicious reasons but probably because it was utterly alien to his way of doing things. At times, he found it hard to stick to answering the questions and not argue with Mr Musker. On several occasions, he tried to seek reassurance from his corner, particularly from Mr Tony Greig (who was responsible for design and marketing at R B Ross, and was the project manager for the work on the pipe frame). Mr Ross admitted that he found it difficult not to boil over in a situation where things were said with which he violently disagreed.
- 55 As a result the cross-examination did not proceed smoothly, and it was necessary for me from time to time to rule on certain lines of questioning as a result of objections by Mr Davis (i) that Mr Musker was cross-examining Mr Ross on the pleadings and skeleton arguments rather than his own evidence, (ii) that questions as to whether Mr Greig was a co-inventor (in view of Mr Ross's explanation of Mr Greig's involvement in the preparation of the drawings for the priority application) were not permissible as this was not part of the pleaded case, and (iii) that it was not for Mr Ross to say why he had not called Mr Spark as a witness. Mr Musker thought these questions necessary in order to get to the truth of who invented what. However, I was in broad agreement with Mr Davis, although I was prepared to allow Mr Musker some leeway to establish whether things in the pleadings which Mr Ross thought he seemed to have overlooked were intended to be part of the evidence, and for Mr Ross to explain what he and Mr Greig actually did.
- 56 Mr Ross came across strongly in the witness box as a someone not comfortable with paperwork, formalities and computers, delegating much of this sort of thing (including handling patent applications) to Mr Greig. He recollection of dates was somewhat hazy and he clearly did not remember much about what precisely he had put his name to in his witness statement, or about the meeting with Mr Allen at Murgitroyds. However, when the questioning turned to technical matters, although still not particularly comfortable, he was much more convincing and not easily shaken. Although experienced in steel fabrication, he admitted that he was not an expert in elastomers and would not necessarily know what was a suitable material for particular purposes: rather, he said, he had a working knowledge gained by trial and error through hands on experience, tending to stick with familiar materials (eg urethanes) and seeking advice from his supplier Mr Spark if necessary. His testimony showed a familiarity with concepts such as the Shore hardness of elastomers as, he said, something one got a feel for.
- 57 In particular, I found his explanations of the trial and error process of developing the prototype generally convincing, with a clear understanding of the technical issues involved. His answers on this were on the whole spontaneous. As I understood Mr Ross, he accepted that his design process had started from a flat surface (Figure 12 of the priority application, a barrel-shaped cross-section with flat top and bottom surfaces), and ended up with the angled profile which appears in Figure 11 of the priority application and Figure 10 of the joint PCT application. He was insistent, in response to Mr Musker's questioning, that there was nothing odd in this despite his assertion that he had initially sketched an angled surface profile for Mr Crabtree, and that he had not simply been trying to design profiles which would scrape fluids from the pipe and provide grease collection points (rather in the manner of his previous mud bucket seals). Mr Ross also said that the initial sketch he had prepared for Mr Crabtree would not on reflection have been

suitable for offshore use because it was wrongly angled, and that his reaction when Mr Crabtree sent the Exhibit 27 sketch back to him was not to take it seriously.

- 58 Which is not to say that I did not find some grey areas in Mr Ross's account, which unfortunately leave me uncertain as to what exactly passed between him and Mr Crabtree at the start of the design process. Mr Davis's case, as explained above, seems to be that Mr Crabtree had some hand in the barrel-shaped embodiment of Figure 12 of the priority document, but Mr Ross did not really provide anything under cross-examination to back this up, other than that Mr Crabtree was insistent that it went into the application. If anything Mr Ross's answers suggested that he designed this profile (and certainly I can find nothing in Mr Crabtree's statement or evidence that points to Mr Crabtree having thought along these lines - the use of what looks like a flat bar in Figure 12 does not really sit with his preference for a square section beam).
- 59 Also, it is unfortunate in view of its significance that there appears to be no surviving copy of the sketch allegedly prepared for Mr Crabtree, which Mr Ross said was similar to Exhibit 27 but without the square insert. I can accept Mr Ross's explanation that it was not his habit to keep copies of rough working sketches. However, I was somewhat surprised in view of his reaction above to the Exhibit 27 sketch when he later said that he thought there might actually be a mould corresponding to it on his premises.
- 60 It did cross my mind as well as Mr Musker's to wonder just how much Mr Ross contributed as opposed to Mr Greig, since he admitted that the drawings for the priority application were practically all Tony's, but in the absence of anything to suggest otherwise, I accept what is said in paragraph 14 of the counter-statement, that the sketches were prepared under Mr Ross's guidance and instructions.
- 61 Having read Mr Breyer's witness statement, I do not consider it to have any real probative value. It is essentially directed to the circumstances surrounding the filing of Mr Crabtree's US patent application, and merely states what Mr Crabtree told him about Mr Ross's contribution to the design of the non-uniform surface profiles. As regards what Mr Ross and Mr Crabtree actually contributed, it would seem to be hearsay and to add nothing to the evidence from the parties themselves.
- 62 I accept that the decision who to call as witnesses lies with the parties, and that there may be good reasons why it was not possible to adduce corroborating evidence from others who were present at crucial times (eg Mrs Crabtree, Mr Greig, Mr Spark and Mr Allen). However, the lack of corroboration does not help me get to the bottom of things, and it therefore reduces to which of the two protagonists I consider to be the more convincing, bearing in mind that I did not find either of them to be wholly satisfactory as a witness. In the light of what I have said above, I consider Mr Ross's account of events to be the more credible.
- 63 I can accept, having seen them both in the witness box, that Mr Crabtree and Mr Ross operate in quite different ways, so that Mr Crabtree might well have felt himself being swept along by Mr Ross and to be losing control of the situation, and might have felt a greater need than Mr Ross to finalise the terms of the draft agreement. However, as I have said, without independent corroboration I simply do not find Mr Crabtree's version of events credible - essentially that

getting angry would have done no good and that only by going along with Mr Ross, including feeding him further design information and paying him a substantial amount of money for work he had not wanted done, could he keep any sort of control of the situation.

64 Also, as I have said, I think it most unlikely that Mr Crabtree would have come up with the relatively complex Exhibit 27 profile, or any of the other non-uniform surface profiles, without something more than a comment from Mr Ross, in the context of sealing rather than clamping, about needing to provide Abite@. It follows therefore that, insofar as the invention relates to non-uniform surface profiles, Mr Crabtree has failed to prove on the balance of probabilities that he is the sole inventor. On that basis I am therefore prepared to find against Mr Crabtree, but a number of other issues were raised at the hearing which I need to consider.

Analysis of case law on entitlement and inventorship

65 I should now return to the authorities cited by Mr Musker, namely *Henry Brothers (Magherafelt) Ltd v Ministry of Defence and Northern Ireland Office* (Court of Appeal [1999] RPC 442 and Patents Court ([1997] RPC 693); *Markem Corporation v Zipher Ltd (No 1)* [2004] RPC 10 and *Bowden v BNOS Electronics Ltd* BL O/270/98 .

66 In *Henry Brothers* the Court of Appeal, upholding the earlier judgment of the Patents Court (Jacob J), held that the correct approach was to determine the inventive concept and then find who invented it, and agreed that a Afairly routine exercise of engineering skill@ would not be an inventive concept. As I read it, although the Court of Appeal did not agree with Jacob J's analysis of the invention as a combination of elements, they did not disagree with his view that the inquiry was more fundamental than simply dividing up a claim and seeking to identify who contributed which element and that it was necessary to decide who Aturned a useless collection of elements into something that would work@.

67 In *Markem v Zipher* , a very recently reported judgment of the Patents Court, the question of validity in entitlement proceedings arose because of material made available to the public before the priority date of the patents or applications in issue, which it was argued fell within at least the broader claims. H H Judge Fysh QC, sitting as a High Court judge, sought amongst other things to answer the following questions

- (1) In entitlement proceedings might (or need) the court take into account the validity of the patent (or application) in issue?
- (2) What meaning was to be given to the word A invention@ as used in the entitlement sections?
- (3) What constituted the devising of an invention and, in particular, at what stage could it be said that an invention had actually been devised?
- (4) When there were mixed contributions, what were the criteria for co-ownership and what impact might that have on the subsidiary claims?
- (5) Was there a requirement for causation between the claimant's alleged antecedent acts and the subject-matter of the patents in suit?

and held (referring here to the headnote)

A(2) Section 7(3) of the Patents Act provided that the inventor was the actual A devisor@ of the invention. The word A advise@ had a slightly broader signification than A make@ or A implement@, viz

that of planning a particular course of action before even that course of action is actually implemented. Such usage accorded well with a jurisdiction which was intended to encompass an inventor's work prior even to the make of a patent application. However, there was a limit and an invention could not be devised merely by the statement of an inchoate desideratum or a goal (para 41)

(3) The decision as to entitlement would be taken on the basis that the applications and patents in issue were valid and account would not be taken whether any of the inventions involved either a significant or trivial advance in the art. (para 49); *Viziball Ltd's Application* [1988] RPC 213 followed.

(4) As far as granted patents were concerned, the wording of the claims could safely be regarded as being an accurate statement by the inventor/proprietor of the essence of his invention (para 51).

(5) Once the claims had been construed in the usual way, the court had to enquire whether, so construed, they covered what as a matter of evidence had been clearly devised by the claimant at an earlier time. If that yielded an affirmative answer and there was requisite causation, prima facie the subject matter of the claim belonged to the referrer (para 65(a)).

(6) In the case of a patent application, the invention could first be identified by an objective consideration of the inventive concept as understood from a reading of the application as a whole. This might have already been done by the invention having been enshrined accurately in claims submitted with the application. Whilst that might be the usual position, it was not necessarily always the case because in practice over-broad claims were sometimes submitted as a means of enlarging the prior art search (para 64).

...

(8) In a case where it was alleged that two parties had contributed to an invention, if what the first party had invented was capable of being put into practice without further invention, ie merely involving matters of routine engineering practice or straightforward software creation for example, there was no possibility of joint proprietorship of a claim covering it. But if more was required, even if the second party's contribution was not patentable as such, the position might be otherwise. In such cases the court needed to decide whether the claimant's contribution formed any real part of the defendant's invention (paras 68-69).

....

(10) The question as to when an invention had been devised had to be approached from the point of view of the man skilled in the art. If he could carry the invention into effect from the description using common sense and common general knowledge, the invention had by then been devised (para 72).

68 I was also referred to the decision of the comptroller in *Bowden v BNOS Electronics Ltd.* where the Hearing Officer held that various matters would not constitute making an invention. These include help to identify or develop a market for the invention and developing the invention into a marketable product rather than helping to construct a prototype to confirm the invention would work.

69 Although *Markem v Zipher* followed the earlier case of *Viziball's Ltd's Application* [1988] RPC 213, Judge Fysh said (paragraph 51):

These considerations led to the following debate: in entitlement disputes should one assess an invention via the wording of the claims alone or by reference to the inventive concept as conceived and described by the inventor? Markem urged me to adopt the former, objective approach. On the other hand, Mr Speck advocated a more subjective assessment via the inventor's intentions as reflected in the inventive concept (or concepts) contained in the specification, in effect downgrading the significance of the claims. I am of the view that there is no basic antithesis between these two positions. Certainly insofar as granted patents are

concerned, the wording of the claims may safely be regarded as being an accurate statement by the inventor/proprietor of the essence of his invention.

70 Mr Musker felt that this had the effect that *Viziball* no longer held good for granted patents, and Mr Davis thought that I would need to have validity at the back of my mind when trying to decide where the inventive step lay. I am not convinced that either of these conclusions necessarily follow from *Markem*, but I note that in paragraph 59 of the judgment, Judge Fysh cautioned against introducing validity arguments through the back door when looking at what was known to the inventor. I do not therefore think that I ought to judge the question of inventorship in the light of validity. However, even if I am wrong on that, neither side put in any evidence of the prior art teaching to enable to form any view (although Mr Davis sought to test Mr Crabtree's credibility at one point in the cross-examination by putting to him a prior art disclosure cited against the joint PCT application).

71 Ultimately, as I have said, it is common ground on the pleadings that Mr Crabtree is at least a joint inventor. However, to my mind it is far from clear on what basis this rests. As I have explained above, I am not convinced that Mr Crabtree did in fact have any hand in devising the profile in Figure 12 of the priority document on which his joint inventorship was alleged by Mr Davis to rest. I believe that I should therefore consider in the light of the above case law whether there is in fact any basis for joint inventorship as regards Mr Crabtree's contribution before he contacted Mr Ross.

72 I am faced with the difficulty, as Mr Davis pointed out, that the pleadings are largely silent on this, although as I have noted, Mr Ross in paragraph 9 of his counter-statement says that he was of the opinion that a pipe lifting frame including slat-like spacers and threaded tension rods was already known, and that he did not consider what Mr Crabtree had to be a distinct in the market place. I bear in mind however Mr Davis's concession that Mr Crabtree had conceived the pipe frame/packing member combination before he met Mr Ross, but not that he could get it to work.

73 As pointed out in *Markem*, the test in section 7(3) of the Act is who is the adviser of an invention not maker, and the judgment suggested that whilst there must be more than a back of the envelope wish list there does not necessarily have to be any reduction of the invention to practice. As I understand it, in considering the criteria for co-inventorship, Judge Fysh (at paragraph 68) thought there two issues - whether the device produced by one co-inventor could be built without further inventive activity by the other (if it could there would be no possibility of joint inventorship), and the quantum and technical quality of the parties' contributions (ie whether a contribution formed a real part of the invention, even if not patentable). He thought (paragraph 72) there did not necessarily have to be a commercial embodiment, and that a paper proposal or even words might suffice if sufficiently detailed - so long as there was an enablement in the sense of a positive answer by the skilled man to the question 'Could you make one of these from such and such a description using common sense and your common general knowledge?'

74 It will I think be helpful to analyse Mr Crabtree's contribution against these criteria (which I do not think are inconsistent with other authorities such as *Henry Brothers*. Analysing the independent claims 1 and 21 of the granted joint patent GB 2363373 B, the apparatus comprises:

(A) a frame comprising a base and side members;

(B) at least one packing member adapted to extend between the side members of the frame and engageable with the frame, the packing member having a rigid centre section with a deformable portion in the form of an elastomer jacket fixed thereto for engaging an exterior surface of elongate members to be handled; and

(C) means for retaining the packing member in contact with the elongate members, wherein (D) the elastomer jacket defines vertical profiles on either side of the centre section shaped to facilitate elastomer displacement with increasing vertical compression.

75 As I understand it, Mr Davis concedes that Mr Crabtree conceived the first three elements of the claim before his meeting with Mr Ross, and had got as far as putting square and circular elastomer jackets on the packing members, but argues that Mr Crabtree did not have anything workable until Mr Ross became involved. However, I do not think it is necessarily right to say there was nothing at all that would work. From Mr Ross's evidence, it appears that his concern was that spacers with a flat or circular profiles would not work for the offshore applications in which Mr Crabtree was interested, but as Mr Musker pointed out the claims are directed to the packaging of elongate materials in general, and I see no reason to suspect that the simpler profiles devised by Mr Crabtree would not be sufficient for some applications.

76 I do not think it is disputed that Mr Crabtree had not reduced his device to practice before meeting Mr Ross. Mr Davis thought this was a telling point, but I think it is more significant that Mr Ross did not start from an entirely blank sheet and thus re-invent the device, but rather engineered the frame and spacers from Mr Crabtree's verbal description and the loading calculations for the frame. I am satisfied on the basis of the material before me that the answer to the question posed by Judge Fysh is that there was enablement since Mr Ross could indeed make Mr Crabtree's frame using common sense and common general knowledge, once he had been given a description and calculations by Mr Crabtree. I therefore consider that Mr Crabtree had gone beyond a mere wish list and is the deviser of the combination of elements (A), (B) and (C).

77 As I have already explained, Mr Davis did suggest that if anything other than the profile invention was in issue, then he should have an opportunity to file evidence in respect of lack of reduction to practice by Mr Crabtree. However, since this lack of reduction to practice does not seem to be in dispute, I cannot see that any useful purpose would be served by this.

78 This combination includes the requirement that the packing members are provided with a deformable elastomeric jacket, and in my view this is what distinguishes it from the frames that Mr Ross regarded as known. The slats used in previous frames may have a measure of deformability, but I see nothing in what is before me to suggest that these would be deformable to a degree sufficient to allow different diameter pipes to be handled together. It will be seen that the combination corresponds broadly to what Mr Crabtree regards as the inventive concept in paragraph 3.6.1 of the statement quoted above.

79 I now need to consider who is the deviser of the fourth element (D) relating to the profiles. I have

already said that following their cross-examination, I find Mr Ross's account of the development of these to be more credible than Mr Crabtree's. As a result I am satisfied on the balance of probabilities that Mr Ross is the deviser of the non-uniform profile, even if there might be some doubt about what exactly passed between them after the first meeting.

80 Insofar as the claims are restricted to non-uniform surface profiles (as this is explained in paragraph 3.6.8 of the statement which I have quoted above) I am therefore satisfied that Mr Crabtree and Mr Ross are joint devisers and hence joint inventors of the invention as claimed in the joint patent GB 2363373 B, although I do not think in view of my analysis above that the basis for this is necessarily that suggested by Mr Davis. (Turning to the claims quoted above from the joint PCT application, the boundary between their respective contributions would seem to be that Mr Crabtree devised the features of claims 19-22, and Mr Ross those of claims 23 (insofar as it relates to non-uniform surface profiles) and 24-26. Having regard to the case that was actually pleaded, I do not propose to go any further in apportioning the various claims between Mr Crabtree and Mr Ross, and I do not in any case think it is necessary for me to do this.

81 I think my conclusion above would follow equally from *Henry Brothers* and *Bowden v BNOS*. In my view it cannot fairly be said that Mr Crabtree had a completely useless collection of elements before he met with Mr Ross, even if it was Mr Ross that provided something extra which made the invention work better in the offshore applications. Nor do I think that either Mr Crabtree or Mr Ross were simply engaging in a routine exercise of engineering skill. In relation to *Bowden v BNOS*, and although the boundary is perhaps not altogether clear in the present situation, I also consider that their activities lie more towards the joint development of a prototype, rather than the developing an invention into a marketable product.

Uniform surface profiles

82 There remains perhaps the question in relation to the GB patent of whether the requirement of claims 1 and 21 for vertical profiles on either side of the centre section shaped to facilitate elastomer displacement with increasing vertical compression (which corresponds to claim 23 of the joint PCT application) embraces the uniform surface profiles, particularly circular, which Mr Crabtree had devised. This was not addressed in the pleadings, but Mr Musker argued at the hearing that the claims would cover such constructions, having regard to the dictionary definition of profile as a side view or outline of an object, quoted by the examiner during prosecution of GB 2363373, and the discussions between Mr Crabtree and Mr Ross (see eg paragraph 4.2.2 of Mr Crabtree's witness statement: Mr Ross asked what surface profiles I had examined. I told him that I had considered round and flat ones.).

83 I make no finding on this, and I suspect that it may not now be of great significance in view of the way the invention has developed. In the absence of full argument on this point, I am far from certain that the claims would be read by the skilled man in the way that Mr Musker suggests. As I read the specification, nowhere is there any pointer to the use of uniform surface profiles. I am in any case not convinced by Mr Musker's argument, because as regards the definition quoted by the examiner, on my reading of the application papers it appears that the claims were further limited to take account of this point.

Estoppel

84 A further issue of law raised by Mr Davis at the hearing was that an estoppel could be effective so as to preserve a party's rights even against the true owner of these rights (*Hartington Conway Limited's Patent Application* [2004] RPC 6,7). Mr Davis took me to the definition of estoppel by representation in Halsbury's Laws vol 16 para 955:

Where a person has by words or conduct made to another a clear and unequivocal representation of fact, either with knowledge of its falsehood or with the intention that it should be acted upon, or has so conducted himself that another would, as a reasonable person, understand that a certain representation of fact was intended to be acted upon, and the other person has acted upon such representation and thereby altered his position to his prejudice, an estoppel arises against the party who made the representation, and he is not allowed to aver that the fact is otherwise than he represented it to be.

As he reminded me, to form the basis of an estoppel a representation may be made either by statement or by conduct; and conduct includes negligence and silence (Halsbury's Laws vol 16, para 1039).

85 If I understand Mr Davis correctly, he argues that Mr Ross relies on two issues:

- (i) the representation in the draft commercial agreement drafted by Mr Crabtree which says A... whereas the two parties agree to secure intellectual property rights as may be obtainable under a Pipe Frame design Patent; both parties agree that Pipe Frame design applications for Patent shall be filed in both parties' names and providing full Patent use rights for both parties in each jurisdiction in which filed (Crabtree Exhibit 43);
- (ii) the conduct of Mr Crabtree and his continued non-objection to exploitation by Mr Ross, in particular:
 - Mr Crabtree's email of 30 Dec 1999 (Ross Exhibit RBR6) referring to some Ainformal verbal agreement permitting Mr Ross to exploit;
 - Mr Crabtree's email of 6 Jan 2000 referring to an agreement which was intended to be formal (Crabtree Exhibit 40); and
 - only as late as 10 August 2000 any indication to the contrary (Crabtree Exhibit 38).

86 Dealing jointly with reliance and detriment, Mr Davis argued that Mr Ross has continued to develop, market and sell the patented product. He referred specifically to the development of a prototype at a cost exceeding , 10,000, Mr Ross's email of 9 August 2000 to Mr Crabtree mentioning further modifications and considerable customer interest (Crabtree Exhibit 37), the production of product flyers and advertisements (Crabtree exhibits 46 & 47) and the investment in patent protection; and generally to the activities detailed in Mr Ross's witness statement from paragraphs 25 onward.

87 Mr Musker denies that there is estoppel by representation. If anything, he argues, and to put it at its strongest, the draft agreement on which Mr Davis relies is better regarded as an offer or conditional promise Aif you do this then I will do that.

88 As was pointed out in *Hartington Conway Ltd's Patent Applications* [2004] RPC 6 at

paragraph 85, a finding on estoppel should not be made without very careful consideration. Accordingly, although the clause in the draft agreement which says:

¶Whereas a Pipe Frame product design initiated, researched and devised by Michael Crabtree has been jointly further enhance, refined and developed with Ralph B. Ross, and whereas the two parties agree to secure intellectual property rights as may be obtainable under a Pipe Frame design Patent; both parties agree that Pipe Frame design application for Patent shall be filed in both parties=names and providing full Patent use rights for both parties in each jurisdiction in which filed@

and the subsequent references to the agreement by Mr Crabtree might seem to lend support to Mr Davis= view, I am not convinced that this is sufficiently clear and unambiguous to constitute a Arepresentation@by Mr Crabtree. As I understood it at the hearing, the parties agreed that there was no concluded agreement between the parties - if anything it seems to have been something that was still for the parties to negotiate about and on balance I therefore think that Mr Musker= view of the draft agreement is to be preferred.

89 Even if I am wrong on that, I am not convinced that Mr Ross has really altered his position to his prejudice on the strength of anything that Mr Crabtree said or did. Rather he would seem to have put in hand the development and marketing of the frame without giving much thought to the precise details of the relationship between himself and Mr Crabtree, leaving this as something to be sorted out later.

90 Since I have found against Mr Crabtree, it is not necessary for me to decide the estoppel point. However, if I am wrong in my finding, I do not consider that any estoppel arises against Mr Crabtree in the light of anything that passed between them. Mr Musker in closing suggested that an estoppel also operated against Mr Ross because Mr Crabtree had only gone ahead with the initial filing because of assurances on branding given by Mr Ross, but the point was not argued in any detail and I make no finding on it.

Conclusions

Joint patents and applications

91 In respect of the invention insofar as it relates to the use of non-uniform surface profiles (as explained in paragraph 3.6.8 of the statement), I find that Mr Crabtree has not proved that he is the sole inventor, and that Mr Crabtree and Mr Ross are joint inventors.

92 I make no finding in respect of the use of uniform surface profiles.

Crabtree patents and applications

93 I make no finding, at least for the time being, in respect of the Crabtree family of patents and applications. As I have said, I do not consider these to be formally within the scope of the present proceedings, and I cannot in any case make any order in respect of the granted Crabtree US patent. Although I recognise that the dispute between the parties cannot sensibly be concluded without taking the Crabtree family into account, I will await the views of the parties

before considering what order, if any, I can make.

Further procedure

- 94 It follows from my finding of joint inventorship that the parties are prima facie jointly entitled to least the joint family of patents and applications. However at the hearing the parties were agreed that, notwithstanding the orders that they had originally sought, it would be sensible for me to give them an opportunity to make submissions as to the form of any order that I should give, and indeed they thought that a finding on inventorship might enable them to come to some agreement as to the disposal of the overlapping families of patents and applications. This seems to me by far the best course of action, and I would strongly urge the parties to attempt to reach a negotiated compromise or settlement. I will be happy to make an order giving effect to any agreement that they reach.
- 95 If the parties are unable to reach agreement, I will consider any separate submissions that they wish to make. In that event I ask the parties to consider whether co-ownership really is going to work if they remain at loggerheads, and whether some form of licensing arrangement, eg giving ownership to one with a right to work to the other, might not be preferable. It may be a factor to consider that to date Mr Ross has made greater strides in exploiting the invention, and that on his own admission Mr Crabtree is unlikely to be able to set up as a manufacturer himself although he says he has a manufacturer lined up to make the frame for him.
- 96 I would also ask the parties to consider, if an order under section 12 is to be made, (i) whether any evidence the appropriate national or regional law is necessary for me to make such an order effective in respect of any pending foreign or PCT applications (although I note that both the joint and Crabtree PCT applications are long past the time when they should have entered the national or regional phase); and (ii) whether by virtue of any agreement or otherwise the ownership of any of the patents or applications should be other than jointly in the names of Mr Crabtree and Mr Ross (for instance, as I have explained, GB 2363373 is currently in the name of Mr Ross only).
- 97 Mr Davis thought that there might be a precedent for me to revoke the Crabtree GB patent if I found against Mr Crabtree. Notwithstanding the generality of the powers available to the comptroller under sections 8 and 12, I am not convinced that they should go that far, and it seemed that the case which Mr Davis had in mind was before the court rather than the comptroller.
- 98 I will give the parties a period of two months from the date of this decision to come back to me with submissions on these matters. Having regard to the way in which the argument at the hearing diverged somewhat from the pleaded case, I must stress that the invitation to make submissions on the form of order is not an invitation to reopen argument or supply further evidence in respect of any of the findings that I have already made. If either party disagrees with any such finding, then the proper course of action is to appeal.

Costs

99 In their statements, both parties have asked for an award of costs. However, I shall defer this issue until I make the final order, although if costs are to follow the event, as is usual, I will need to take account of my finding that Mr Crabtree has not made out his case. It is open to the parties to make submissions on costs if they wish, again within a period of two months from the date of the decision.

Appeal

100 Under the Practice Direction to Part 52 of the Civil Procedure Rules, any appeal against this decision must be lodged within 28 days. I recognise that this will not allow the parties to await my final order before deciding whether to appeal. However, there would not appear to be any power for the comptroller to direct a different appeal period: this would be a matter for the court.

R C KENNEL

Deputy Director acting for the Comptroller