



PATENTS ACT 1977

CLAIMANT	Bollard Proof Limited
DEFENDANT	Michael Harrison
PROCEEDINGS	Application under section 72 for revocation of patent GB2502993
HEARING OFFICER	H Jones

Mr Richard Davis, instructed by IK-IP Ltd, appeared for the claimant
Mr Marc Maidment of Albright IP Ltd appeared for the defendant

Hearing date: 1 November 2022

DECISION

Introduction

- 1 This decision concerns an application by Bollard Proof Limited (“the claimant”) for revocation of UK patent GB2502993 (“the patent”) in the name of Mr Michael Harrison (“the defendant”). The patent relates to a device for testing a dockside bollard and was filed by Mr Harrison on 13 June 2012. The patent was granted in June 2016.
- 2 The claimant’s application under section 72(1) of the Act was made on 20 January 2022. It sought revocation of the patent on the grounds that it lacked novelty and inventive step in the light of two documents: “Structural Systems Research Project: Bollard capacity test for a modular hybrid pier” (“SSRP document” or “D1”), and “Unified Facilities Criteria: Inspection of Mooring Hardware” (“UFC document” or “D2”). Both of these documents were said to have been made available to the public before the filing date of the patent.
- 3 A counterstatement acknowledging that claim 1 of the patent lacks novelty over D1 and a proposal to amend the patent under section 75 of the Act were filed by the defendant on 28 March 2022. The claimant replied on 14 April 2022, maintaining that the patent as proposed to be amended remained invalid on the grounds of obviousness over D1 and common general knowledge.
- 4 Both sides filed evidence from technical witnesses and the defendant submitted a revised proposal to amend the patent to overcome perceived clarity and sufficiency issues identified by the Office. The matter subsequently came before me at a videoconference hearing on 1 November 2022, at which the claimant was represented by Mr Richard Davies of Hogarth Chambers, instructed by IK-IP Ltd, and the defendant by Mr Marc Maidment of Albright IP Ltd. I am grateful to both Mr Davis

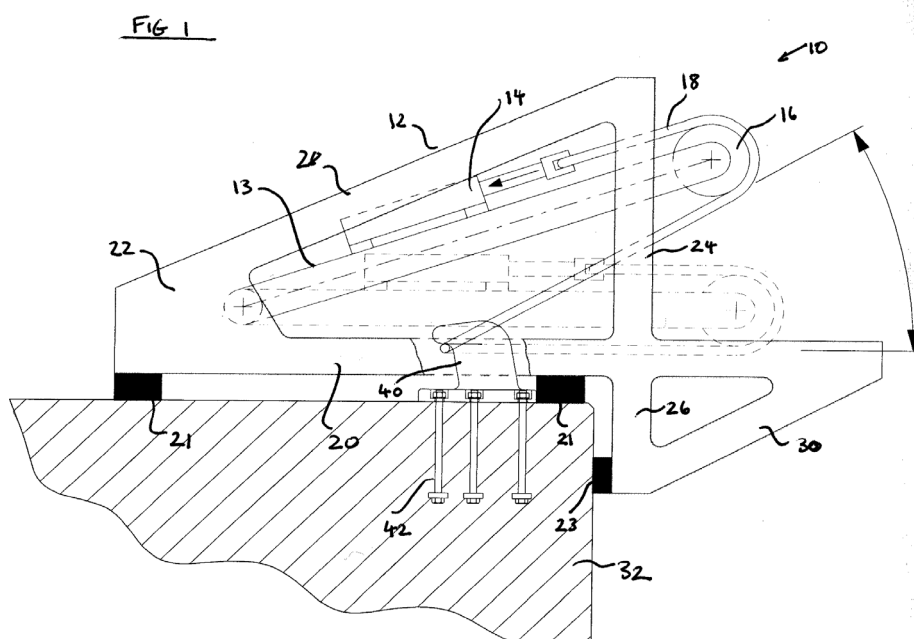
and Mr Maidment for assisting in the orderly presentation of arguments and evidence at the virtual hearing, especially in the cross-examination of the expert witnesses.

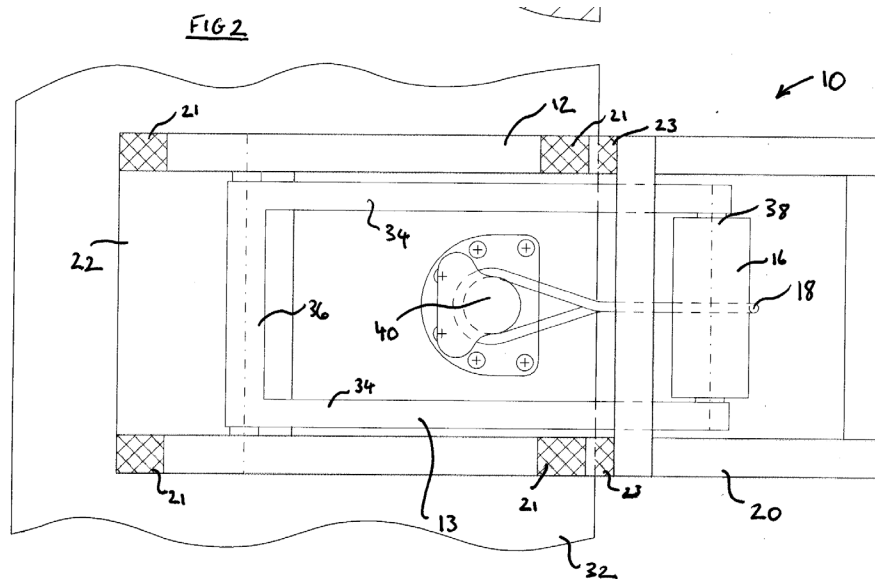
Security for costs

- 5 At the time of filing the counterstatement, the defendant requested that the comptroller make an order under section 107(4) of the Act for the claimant to provide security for costs in these proceedings. A witness statement from Mr Harrison set out the reasons for making the request. The claimant noted that the defendant had already accepted that the granted patent was invalid and so the issue of a costs award was not appropriate. Even if it were appropriate, the claimant suggested that the quantum of costs given the nature of the proceedings would not amount to a sum where security was justified. Nevertheless, the claimant was prepared to pay a nominal sum into their attorney's client account pending any costs award made in these proceedings, and the defendant was satisfied with this arrangement. It was later confirmed that the claimant's attorney was in receipt of funds covering the security offered. There was therefore no need to make an order under section 107(4).

Granted patent and proposed amendments

- 6 The patent relates to a device for testing dockside bollards, comprising a frame adapted to rest on a dockside and having means adapted to be attached to, and to apply a force to a bollard, and having associated measuring means adapted to measure the force applied to the bollard.
- 7 The bollard testing device is described in the patent specification with reference to two figures (figs. 1 and 2), showing the device in side and plan views respectively, as shown below:





8 As described in the description and shown in the figures, the device (10) comprises a first (or main) frame (12), a second frame (13), a hydraulic ram (14), a pulley (16) and a cable (or rope) (18). The first frame comprises a base portion (20) adapted to rest on a dockside (32) surrounding the bollard (40) under test, and a (second) vertical portion (26) adapted to extend downwardly over the dockside edge, whereby, in use the base portion (20) and the vertical portion (26) will exert forces on the dockside (32) which are respectively substantially downward and inland. The hydraulic ram (14) and the pulley (16), over which the cable (18) passes, are described and shown as mounted on the second frame (13), which is pivotally mounted to a hinge portion (22) of the first frame (12), so that the angle between the cable (18) and the horizontal may be adjusted. A load cell or other measuring device (not shown) is used to measure the tension applied via the cable (18) to the bollard (40).

9 The patent was granted with a single independent claim:

1. A device for testing a dockside bollard comprising a frame having a base adapted to rest on the dockside, means attached to the frame for applying a force to the bollard and a measuring device for measuring the force applied to the bollard, the frame including at least one portion extending downwardly from the base which, in use, extends downwardly over the dockside edge for transferring force to the dockside during testing.

10 Alternative inventive aspects were defined in dependent claims.

11 The latest set of proposed amended claims were filed on 26 August 2022, with the independent claim comprising the substance of claims 2 to 4 as granted incorporated into claim 1 as granted:

1. A device for testing a dockside bollard comprising a first frame having a base adapted to rest on the dockside, a second frame pivotally mounted to the first frame, means attached to the second frame for applying a force to the bollard and a measuring device for measuring the force applied to the bollard, the first frame including at least one portion extending downwardly from the base which, in use, extends downwardly over the dockside edge for

transferring force to the dockside during testing in which the angle between the direction of the applied force and the horizontal is adjustable.

- 12 The proposed amendments were deemed allowable by the Office insofar as the independent claim does not extend the scope of protection conferred by the patent nor does it result in the disclosure of additional matter (a requirement of section 76(3)). The claimant does not challenge this.

The law

- 13 There is no dispute as to the law. The comptroller's power to revoke patents on application is set out in section 72 of the Act, the relevant portion of which states:

Section 72(1)

Subject to the following provisions of this Act, the court or the comptroller may by order revoke a patent for an invention on the application of any person (including the proprietor of the patent) on (but only on) any of the following grounds, that is to say -

(a) the invention is not a patentable invention;

- 14 Provisions relating to the amendment of patents in revocation proceedings are set out in section 75 of the Act.

- 15 The comptroller's ability to allow amendments to be made by the owner of a patent is set out in section 75(1):

Section 75(1)

In any proceedings before the court or the comptroller in which the validity of a patent may be put in issue the court or, as the case may be, the comptroller may, subject to section 76 below, allow the proprietor of the patent to amend the specification of the patent in such manner, and subject to such terms as to advertising the proposed amendment and as to costs, expenses or otherwise, as the court or comptroller thinks fit.

- 16 The requirement for an invention to involve an inventive step is set out in section 1(1) of the Act, the relevant provisions of which are:

Section 1(1)

A patent may be granted only for an invention in respect of which the following conditions are satisfied, that is to say –

(a) ...

(b) It involves an inventive step;

(c) ...

(d) ...

and references in this Act to a patentable invention shall be construed accordingly

17 Section 3 of the Act relates to inventive step, and reads:

An invention shall be taken to involve an inventive step if it is not obvious to a person skilled in the art, having regard to any matter which forms part of the state of the art by virtue only of section 2(2) above (and disregarding section 2(3) above).

18 The approach to be followed in assessing whether an invention provides such an inventive step is that laid down by the Court of Appeal in *Pozzoli*¹. That test comprises the following steps:

(1)(a) Identify the notional “person skilled in the art”

(1)(b) Identify the relevant common general knowledge of that person;

(2) Identify the inventive concept of the claim in question or if that cannot readily be done, construe it;

(3) Identify what, if any, differences exist between the matter cited as forming part of the “state of the art” and the inventive concept of the claim or the claim as construed;

(4) Viewed without any knowledge of the alleged invention as claimed, do those differences constitute steps which would have been obvious to the person skilled in the art or do they require any degree of invention?

Witnesses and evidence

19 Both sides have filed expert reports from technical witnesses to assist in the assessment of inventive step, and both were cross-examined at the hearing. The claimant’s witness is Mr Robert Gabbitas, a director of the claimant company and a marine engineer. The defendant’s witness is Mr Mark Ball, a civil and maritime engineer and engineering consultant. Both have experience in the use of test rigs for *in situ* testing of dockside bollards.

Mr Gabbitas

20 Mr Gabbitas has been involved in the marine industry since the 1980’s, taking up the roles of design engineer, director of engineering and technical director in various companies. In 2009 he formed a company called QuayQuip, which provided various dockside equipment and services, then in 2017 he established a company called Ship2Shore and shortly afterwards became involved with the claimant company, Bollard Proof Ltd. He explained in cross-examination that he had a HND qualification in production engineering. He acknowledged in his expert report that he had an interest in the outcome of these proceedings because of his role as director of Bollard Proof, which itself provides bollard testing services and, until recently, was a licensee under the patent (saying that the license has now been terminated). He says that he knows the defendant (the owner of the patent), Michael Harrison, having

¹ *Pozzoli SPA v BDMO SA* [2007] EWCA Civ 588

previously worked with him at several marine equipment manufacturers and specifically in relation to bollard testing. He acknowledges that the two are not currently on the best of terms.

- 21 Given this context, it was no wonder that in his cross-examination of Mr Gabbitas, Mr Maidment would seek to highlight the potential conflict of interest in Mr Gabbitas' evidence. In his closing arguments, he cautioned against my acceptance of Mr Gabbitas' evidence because of this potential conflict, which Mr Davis took strong exception to. Mr Maidment referred to a number of authorities concerned with the acceptance of evidence from a witness when there exists a "*relationship between the proposed expert and the party calling him which a reasonable observer might think was capable of affecting the views of the expert so as to make them unduly favourable to that party*" (e.g. *Liverpool Roman Catholic Archdeacon Trustees Inc v Golberg (No 3) [2001] 1 WLR 2337 para. 13*). However, having heard Mr Gabbitas' replies under cross-examination, I found Mr Gabbitas' contribution to be wholly in keeping with his duty to assist me in my assessment of the patent and the state of the art, and I do not consider that Mr Gabbitas' evidence as to the facts before me was influenced by any potential bias.

Mr Ball

- 22 Mr Ball is a chartered maritime civil engineer with over 30 years of experience in the design, construction and investigation of maritime structures, and has experience of providing expert witness reports in High Court proceedings. His evidence addressed his knowledge of the dockside bollard testing industry as of June 2012 (at the time of filing the patent), his opinion as to the common general knowledge in bollard load testing arrangements at that time, and his understanding of the disclosures in D1, D2 and the patent. He was subject to some forensic cross-examination by Mr Davis and provided straightforward replies, and I formed the view that he was a good witness.

Summary of witness evidence

- 23 I am grateful to Mr Gabbitas and Mr Ball for their evidence. They each had their own perspective on exactly what was known, and how widely known and by whom, at the priority date of the patent. There was, however, no dispute that the primary piece of prior art, D1, was available at that date. Likewise, there was no dispute that at that date pivot mechanisms, pulleys, hydraulic rams and various types of high-friction surfaces were known, among other mechanical means or structures, in the field of marine and wider mechanical engineering.
- 24 As Mr Davis acknowledged, the evidence of the experts is not that far apart on the technology. This is not a case where there is a contradiction in the expert evidence that needs to be resolved one way or the other. The essential difference between the two experts lies in what they each consider would be obvious from the prior art to a skilled person having the relevant common general knowledge. That, of course, is something for me to assess based on the factual evidence supplied by the witnesses and the arguments presented by Mr Davis and Mr Maidment.

The prior art

- 25 It is common ground that D1, the SSRP document, represents the closest prior art. The test rig disclosed is most clearly seen in figure 3.1, which gives an elevation view:

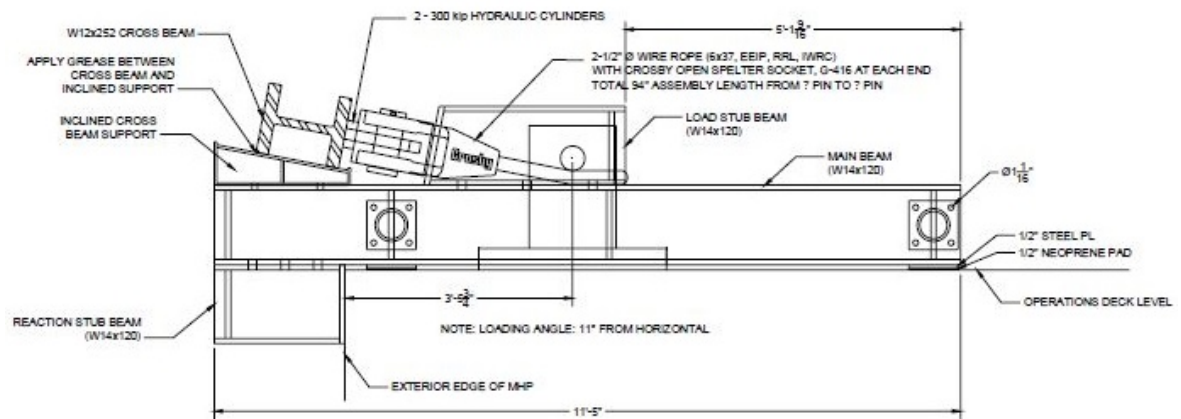


Figure 3.1 - Setup for Bollard Test - Elevation View

26 Figure 3.7 is a series of three Bollard Test Instrumentation Photos; the latter two particularly show further detail of the test setup:



(b) Wire Rope in Spelter Socket Around Bollard



(c) Cross-Beam and Hydraulic Jacks at 11°

27 D1 states that hydraulic jacks were attached to a reaction system that consisted of a steel frame that was secured horizontally in place by reacting against the edge of the

dockside when it was pushed by the jacks. The other end of the jacks pushed against a cross-beam, which could slide along an inclined surface having an angle of 11°, and the system was completed by a steel rope that wrapped around the bollard under test and was attached to the cross-beam with spelter sockets. Pressure transducers were installed to monitor the hydraulic pressure of the jacks and to estimate applied load.

- 28 The relevance and admissibility of D2, the UFC document, was disputed. It is a publication of the US Army Corps of Engineers, marked as “Approved for Public Release: Distribution Unlimited”.
- 29 Mr Davis noted that it “defines itself as a handbook addressed towards exactly the sort of people who are contemplated by both experts as being the skilled team”. Mr Maidment however argued that it has not been proven to be the common general knowledge in the UK.
- 30 I think the issue is moot. The individual features disclosed in D2 which are relevant to the invention defined in the proposed amended claims are anyway well known in the field of mechanical engineering, and would be within the common general knowledge of the skilled team (see below). Mr Davis went so far as to say that the claimant did not need D2 in order to establish the common general knowledge, and I agree.

Skilled person and common general knowledge

- 31 There was general agreement that the skilled person would be a team comprising qualified and experienced mechanical and marine engineers desirous of using a test rig for *in situ* testing of dockside bollards.
- 32 There was no dispute as to the general mechanical engineering principles which such a team would know: the common general knowledge of the skilled team (as distinct from how they would apply that knowledge). Such a team would know about wedges (inclined supports) and pivot joints; selection of different length frame members and telescopic frame members; pulleys, cable drums, hydraulic rams, load cells, high-friction surfaces, safety cages, etc., and how such things may be used, and where they may be used alternatively or interchangeably.
- 33 In his evidence, Mr Ball agreed that a skilled team, having the D1 document and tasked with designing a test rig, would realise the desirability of being able to change the angle of the applied force “relatively easily”. He noted that this could be achieved by having “separate wedges”, (i.e. the inclined cross-beam support of figure 3.1).
- 34 In cross-examination, Mr Davis put to him that “if you want to adjust the angle ... you either make horizontal or vertical adjustments... or you somehow have an angular adjustment of the members?”. Mr Ball conceded that. Mr Davies further put to him that “the absolutely conventional way of providing angular adjustment is to use a pivot joint?”. Again, Mr Ball conceded, although rather reluctantly.
- 35 Mr Davis put to Mr Ball that the skilled team designing the test rig, from the disclosure of D1, would understand the need to cope with varying distances between bollards and dock edges. Mr Ball agreed. Mr Davis suggested that the skilled team would understand that this could be achieved by altering the length of the frame members, by unbolting the first and putting in longer or shorter ones, but that they

would also know that another way of doing this would be to use telescopic frame members. Mr Ball suggested that this would be “an oblique engineering move”.

- 36 Mr Maidment noted that the authors of D1 were “a team”, and, he suggested, “probably a lot more skilled than a skilled team would be”, but, he noted, “this team spent time developing this test rig and did not put a pivot in or pivot the angle at all.”

Inventive concept

- 37 As regards the second *Pozzoli* step of identifying the inventive concept of the claim, there was no real discussion. The scope of the invention is clear from the claims.

- 38 The claimant suggested that the “alleged inventive concept” is threefold:

- (1) a test rig in which the angle of load application can be varied in order to replicate realistic loading conditions;
- (2) in order that the load application can be varied easily, to make the rig ‘adjustable’;
- (3) structurally embodying that adjustability by the use of a pivot.

- 39 I think that fairly represents the inventive concept.

Difference

- 40 Addressing the third step, Mr Davis suggested that the only difference between the test rig of D1 and that defined in the proposed amended claim 1 of the patent is how the angle of application of force to the bollard under test is achieved (11° in the specific embodiment detailed in D1). In other words, whether the mounting is pivotal or not.

- 41 Mr Davis described the test rig of D1 as comprising a frame having first and second parts, which it is desirable should be angularly adjustable. He argued that the skilled addressee would take from D1 the conceptual function of a two-part test rig, of which one part stays still and the other moves.

- 42 He acknowledged that D1 does not explicitly disclose inclusion of a pivot. But he argued that it teaches a very clear starting point, and gives a signpost along the way to claim 1. Section 3.2 of D1 describes the experimental test setup, saying that “*the height and angle of load application can be varied with minor modifications in the test setup should a different failure mechanism be anticipated for the bollard, or to accommodate a particular geometry*”. (The preceding section of D1, section 3.1, explains how there are few standards for validating the capacity of a bollard in existence and that it is anticipated that the full-scale test rig would be instrumental in creating a test methodology for a future standard).

- 43 Mr Maidment however disagreed. He suggested that an important distinguishing feature of claim 1 over D1 is that there is a second frame. He noted that in D1 the frame is bolted together, with no part clearly corresponding with the “second frame” of the claim or being pivotally mounted. The force applied to a bollard at an angle to the horizontal surface of the dockside is provided by a steel cross-beam moving along an inclined surface of 11°. Mr Maidment also noted that the cross-beam of D1

is not actually attached to the inclined cross-beam support, but is on a greased surface of that support so that it can slide. He questioned whether this cross-beam could anyway be considered to correspond with the second frame of claim 1, since it is a beam rather than a frame as such.

Inventive step

- 44 For the final step of the *Pozzoli* test, that of determining whether these differences constitute steps which would have been obvious to the skilled team, or whether they require any degree of invention, I must address certain questions.
- 45 Would the skilled team, given D1, immediately recognise that the same test setup (as shown in figures 3.1 and 3.7) could be used to test other bollards at other docksides?
- 46 It was common ground that there were not, at the priority date of the patent (or even now), many firms providing *in situ* testing of dockside bollards, or many engineers with experience and expertise in this field. This was recognised by the claimant in appointing Mr Gabbitas, a director of the claimant company, as their expert witness. Mr Maidment asked Mr Gabbitas if he could give a very rough estimate as to how many marine bollards there may be in the UK. He thought it might be in the region of 10,000 to 20,000. Section 3.1 of D1 notes that, “*Currently, there are few standards for validating the capacity of a bollard.*” Nevertheless, ‘few’ or ‘not many’ is not ‘not any’.
- 47 It was also common ground that the ‘skilled person’ may be a team comprising experienced engineers desirous of using a test rig for *in situ* testing of dockside bollards. Members of such a team would have seen a variety of dockside bollards, of different size, shape and material construction, at docksides of various geometries. In considering the disclosure of D1, in relation to testing specific bollards at a specific location, it would be apparent to such a team that a similar set-up, *mutatis mutandis*, could be used elsewhere.
- 48 Would they appreciate that some variation would need to be made to accommodate a different dockside environment (particularly the bollard being a different distance from the dock edge)?
- 49 D1 describes testing of a specific bollard at a specific dockside. These are described and shown in sections 1.1 and 1.2 and figures 1.4 and 1.5. The bollard is of concrete filled galvanised steel, bolted to the operations deck, with an expected service load of 200 kips (kilo-pounds, a unit of force used in the US) and designed with a safety factor of two; the dock is a floating reinforced concrete Modular Hybrid Pier (MHP). But reference is made in section 1.1 to other dock environments, and section 3.2 specifically states that, “*The design of the test apparatus is general enough to be used as a standard test apparatus for different bollard types*”. If it were not anyway obvious to the skilled team that the set-up described in D1 could be taken as a pattern for testing other bollards at other docksides, D1 itself suggests this.
- 50 Would they understand that it may be desirable or necessary to vary the angle of load application?
- 51 Again, D1 specifically suggests this. In section 3.2 it states that, “*The height and angle of load application can be varied with minor modifications in the test setup*

should a different failure mechanism be anticipated for a bollard, or to accommodate a particular geometry.”

- 52 Would it be obvious to that team what the “minor modification” should be, which will vary the angle?
- 53 I think it would be. The angle is provided in figure 3.1 of D1 by the slope of the top face of the inclined cross-beam support. I agree with Mr Ball here, that it would be evident to the skilled team that a different angle could be provided by a differently shaped inclined cross-beam support, *i.e.* one having either a steeper or a shallower slope.
- 54 However, as an alternative: would the team recognise the desirability of making one repurposable test rig such that it could be used at various locations, with bollards at docksides of different geometries, without major rework for each location, and without needing to manufacture different component parts?
- 55 In cross-examination, Mr Davis asked Mr Ball whether the skilled team would realise that, in building the test rig it would be desirable for it to be adjustable (specifically in relation to the angle of application of the force) “relatively quickly and easily”. Mr Ball agreed with the necessity for it to be adjusted “relatively easily”, but he did not see that it would be expected to be done quickly.
- 56 The skilled team knows that there is not a vast number, but a significant number of marine bollards which may require testing. Given the cost and time required to build one test rig, and knowing that there will be some differences at each test site and for each bollard, I think it can be reasonably expected that a skilled team of engineers would appreciate the desirability of minimising the need for reworking or completely rebuilding the test rig for each test or set of tests.
- 57 Would they then conceive the idea of replacing the inclined cross-beam support with a pivotally connected second frame portion?
- 58 As Mr Davis has noted, the team would be very familiar with the use of pivot joints. But knowing about pivot joints, and that they provide a readily adjustable angle of connection between two frames, or two portions of a frame, is not the same as finding this an obvious substitute for a working existing arrangement.
- 59 Mr Maidment has noted that the cross-beam, to which is attached the means for applying force to the bollard and the means for measuring that force, is a beam rather than a frame. The team might substitute a ‘two-dimensional’ frame for the linear beam; that might be considered a ‘workshop modification’. But would they, rather than allowing that frame member to rest on the cross-beam support, attach it to the existing frame structure, and do so using a pivot joint?
- 60 The arrangement disclosed in D1 is an inclined support on one side of the test rig: the side in the direction from which the force is applied under test conditions; the side towards the edge of the dock; the left-hand side in figures 3.1 and 3.7. It seems to me that to replace this with a pivot joint on the opposite side of the test rig would require some reworking of the design of the reaction system of the test rig (comprising the main beam and load stub beam as well as the cross-beam support of figure 3.1), and consideration of the reactive forces acting on these structural components of the test rig frame. I consider that for the skilled team to replace the

cross-beam and inclined cross-beam support with a pivotally connected frame portion would involve a degree of innovation, and, consequently, that it would not constitute an obvious step.

- 61 It is not necessary for me to consider the inventiveness of the alternative aspects defined in the dependent claims.

Conclusion

- 62 I find that the defendant has succeeded in identifying an allowable amendment to the claims of the patent, which will inventively distinguish the claimed invention from the prior art disclosed in D1. The proposed amendments under section 75 will be allowed and the patent will be maintained in the form as proposed to be amended.

Costs

- 63 The claimant has succeeded in its claim that the granted patent lacks novelty with respect to D1, which the defendant conceded very early in proceedings (in its counterstatement). The defendant has since been successful in defending the patent as proposed to be amended against a claim to lack of inventive step. This points to an award of costs in favour of the defendant, possibly towards the lower end of the published scale of costs given the claimant's partial success. Given the speed it has taken to bring the matter before me, the relatively straightforward nature of the case and the limited amount of evidence, I do not consider that this case warrants a departure from the scale of costs awarded by the comptroller. Nevertheless, I will invite submissions from both sides before making such an award, such submissions to be filed within 8 weeks from the date of this decision.

Appeal

- 64 Any appeal must be lodged within 28 days after the date of this decision.

H Jones

Deputy Director, acting for the Comptroller