



***THE SUPREME COURT OF APPEAL
OF SOUTH AFRICA***

Reportable
Case No: 256/01

In the matter between:

SCHLUMBERGER LOGELCO INCORPORATED

Appellant

and

COFLIXIP SA

Respondent

Coram: Harms, Scott, Streicher, Nugent, JJA and Jones, AJA

Heard: 22 August 2002

Delivered: 6 September 2002

Patent – apparatus using hose for transfer of fluid between seabed and sea surface – infringement – lack of novelty – obviousness – lack of clarity – admissibility of expert evidence in regard to obviousness.

J U D G M E N T

STREICHER, JA

STREICHER JA:

[1] The appellant installed apparatus for the purpose of transferring oil produced by a sub-sea deposit, from the seabed to the sea surface at a Soekor Field Development Project near Mossel Bay. The Commissioner of Patents (Southwood J) found that by doing so the appellant infringed Patent 89/1418 ('the patent'), granted an order interdicting the appellant from infringing claims 1, 8 and 9 of the patent and dismissed a counterclaim for the revocation of the patent. With the necessary leave the appellant now appeals against the findings of the court *a quo*.

[2] The patent relates to an apparatus using at least one hose for the transfer of fluid, particularly oil, between the seabed and the sea surface. The hoses so used are also referred to as flexible-pipe risers or simply flexible risers. The flexible pipe is characterized by a composite construction with layers of different materials, which allow large amplitude deflections without adverse effects on the pipe. Flexible risers accommodate differential motion by an added length of pipe between the two points to be linked. The added length can be utilized in different patterns according to the environmental conditions, the loads to which it is subjected and its relative motion and position in relation to the seabed connection point. As at the priority date of the invention, namely 24

February 1988, various configurations of flexible risers were known and utilized. Those that are relevant for present purposes and were considered to be the major flexible riser configurations at the time are known as the Free Hanging, Lazy S, Steep S, Lazy Wave and Steep Wave configurations which are illustrated in the figures below.

[3] In the case of the Lazy S, Steep S, Lazy Wave and Steep Wave configurations the hoses extend in a catenary between the surface support and an intermediate positive buoyancy element imparting to the hose, over a portion of its length, a curved configuration of concavity turned toward the seabed. The intermediate element might be an arch of concavity turned toward the seabed, if necessary connected to the seabed by tie rods, a plurality of buoys placed in succession and fastened to the hose, or a buoyancy chamber connected by tie rods to the seabed. In the Lazy S and Lazy Wave configurations the portion of the hose below the intermediate element exhibits a catenary-shaped configuration to the level of the seabed, the hose then extending on the seabed to a wellhead or to a connecting element located on the bed. In the Steep S and Steep Wave configurations the portion of the hose between the intermediate element and the seabed is taut, the lower end of the hose being fastened to a base resting on the seabed. In this type of configuration it is necessary to connect the lifting hoses to the previously installed base and to connect the hose

or hoses coming from the wellhead to this base.

- [4] In the specification of the patent it is stated:
‘The apparatus according to the invention is close to the “STEEP S” or “STEEP WAVE” type in the sense that a part of the hose below the intermediate element is held taut by being connected to a stationary point on the sea bed and is characterized essentially by the fact that it comprises holding means for at least one zone of said lower part of the hose, connected to said stationary point and made to hold taut the part of the hose located between the intermediate element and the holding means and to impart to the hose in a vertical plane, a predetermined necessary curvature whose concavity is directed in the direction of the wellhead or the structure located on the bed and from which the oil must be lifted.
In a preferred embodiment, said holding means comprise at least one collar placed around the hose, between the intermediate element and the bed, said collar - - intended to take up the pull of the hose - - being connected by at least one anchoring tie rod to the stationary point, made preferably in the form of a deadman placed on the sea bed. . . .

. . .

In this embodiment, it is advantageous also to position on the hose, in its horizontal part, at the level of the sea bed, at least a second collar connected also by one or more tie rods to the deadman.

. . .

Other holding means can be provided according to the invention, such as for example articulated vertebrae extending from the deadman over a part of the length of the lower part of the hose, the hose then being fastened to the deadman. In another embodiment, these holding means can consist of a neck solid with the deadman performing a holding and a guiding, in a vertical plane, of the corresponding part of the hose.’

[5] Claim 1 reads as follows:

‘1. Apparatus for transfer of fluid between the sea bed and the sea surface particularly for the gathering and lifting of oil produced by a subsea deposit comprising at least one hose extending in a catenary between the surface support and an intermediate element imparting to the hose, over a portion of its length, a curved configuration of concavity turned toward the bed, a part of the hose between said intermediate element and the sea bed being made taut by being fastened to a stationary point on the bed, characterized by the fact that it comprises holding means for at least one zone of said lower part of the hose, connected to the stationary point, consisting of a deadman and made to hold taut part of the hose located between the intermediate element and the holding means, and to impart to the hose in a vertical plane, a predetermined curvature whose concavity is directed toward a wellhead or similar structure, located on the sea bed and from which the oil must be lifted.’

(My underlining.)

Like the court *a quo* I shall refer to the underlined passages as integers (v) and (vii) respectively and to the configuration proposed by the patent as the pliant wave configuration.

[6] Claim 8, which is dependent on claim 1, adds the additional feature that the hose is continuous between the support surface and the structure located on the seabed from which the oil must be lifted. Claim 9, which is also dependent on claim 1, adds the additional feature that the intermediate element consists of a group of positive buoyancy elements fastened to the hose, spaced along its length.

[7] It is convenient, as it will assist in explaining the invention, to first deal with the question of infringement, assuming that the patent is valid.

INFRINGEMENT

[8] The following diagram is an as-built diagram of the Soekor apparatus.

[9] The diagram depicts an apparatus for the transfer of oil from a wellhead on the seabed to a production platform (Sedco 1) floating on the sea surface. The apparatus consists of a continuous hose (a production riser) (1) extending in a catenary between the production platform (the surface support) and an intermediate element consisting of buoyancy modules (3). The buoyancy modules impart to the hose, over a portion of its length, a curved configuration of concavity turned toward the bed. A part of the hose between the intermediate element and the seabed is made taut by being fastened to a stationary point on the bed (detail 5). The stationary point consists of a deadweight anchor, also called a deadman (4) and the connection to the hose is by way of a tieback clamp (8). A predetermined curvature, whose concavity is directed toward the wellhead, is imparted on the hose below the tieback clamp (detail 5).

[10] The appellant contended that integers (v) and (vii) were not present in the Soekor apparatus.

[11] The court *a quo* held that upon a proper construction of the claim the apparatus (and not the holding means alone) had to impart the predetermined curvature required by integer (vii) as it was, according to the court *a quo*, obvious that a single holding means could not on its own hold taut a part of the hose or impart to the hose a predetermined curvature. Only the whole apparatus could impart such a predetermined curvature.

[12] On my reading of claim 1, it provides that the ‘apparatus . . . comprises holding means . . . connected to the stationary point (at the bed) consisting of a deadman . . . made to hold taut part of the hose . . . and (made) to impart to the hose . . . a predetermined curvature . . .’ (the insertions between brackets are mine). So read, it is the holding means connected to the a deadman which has to impart the predetermined curvature to the hose.

[13] The appellant submitted that the holding means utilized in the Soekor apparatus did not impart the predetermined curvature to the hose and that it therefore did not contain integer (vii).

[14] Two witnesses gave expert evidence at the trial. The appellant called Prof Larsen, a professor in marine structures in the Norwegian University of Science and Technology since 1984 where he has been head of the Department of Marine Structures since 1998. The respondent called Mr Luppi, a mechanical and structural engineer, who has since 1976 gained extensive experience in the engineering and laying of risers.

[15] Larsen expressed the view that a single clamp connected to a deadman by a tie rod, could not by itself impart a curvature on an apparatus such as the one described in claim 1 and did not do so in the case of the Soekor apparatus. I do not agree. The Soekor apparatus actually proves that it can be done. It is self-evident that in order to impart a curvature on a part of an apparatus you need the

apparatus on which the curvature is to be imparted to do so. But, it does not follow that it is the apparatus that imparts the curvature. In this case the apparatus on which the curvature is to be imparted consists of a hose and a buoyant intermediate element. According to the evidence of Larsen it is the length of the hose (i.e. the positioning of the clamp on the hose), the distance between the deadman and the wellhead (i.e. the positioning of the deadman on the seabed) and the length of the tether which determined the curvature of the hose towards the wellhead in the Soekor apparatus. According to the evidence of Luppi those three factors, coupled with the way the apparatus was arranged, more particularly the net uplift force exercised by the buoyant intermediate element, determined the curvature towards the wellhead. This fourth factor was not canvassed with Larsen but it seems to me to be obvious that it would have an effect on the curvature. It follows that on the evidence of both Larsen and Luppi, given an apparatus consisting of a flexible riser, with a buoyant intermediate element, connecting a wellhead to a surface support, a different position of the clamp on the hose, or of the deadman on the seabed or a different length of tether will bring about a different curvature. They are, therefore, in agreement that a holding means consisting of a clamp, deadman and tether can impart a curvature on such an apparatus. In the case of the Soekor apparatus the curvature so imparted was predetermined. A distinction needs to be drawn between what determines the extent of the curvature and what imparts the

curvature. The two expert witnesses as well as the court *a quo* failed to draw this distinction. In the Soekor apparatus the curvature was imparted by the holding means when applied to the apparatus while the four factors mentioned above determined the extent of the curvature so imparted. It follows that integer (vii) is present in the Soekor apparatus.

[16] The court *a quo* found that the area of the hose underneath the clamp constituting the holding means in the Soekor apparatus constituted a zone within the meaning of the word 'zone' in integer (v). Integer (v) was, therefore, found to be present in such apparatus. The appellant submitted that this interpretation of the word 'zone' conflicted with the specification read as a whole and that on a proper interpretation of integer (v) a single clamp did not qualify as 'a holding means for a zone of the hose'. In this regard the appellant relied on the fact that according to the specification the holding means could be provided by articulated vertebrae extending from the deadman over a part of the length of the lower part of the hose, or by a neck solid with the deadman performing a holding and a guiding, in a vertical plane, of the corresponding part of the hose. Furthermore, in its description of the preferred embodiment, the specification states that it is advantageous also to position on the hose, in its horizontal part, at the level of the seabed, at least a second collar connected also by one or more tie rods to the deadman. In these cases, so the argument went, a holding means was provided for that area of the hose to which the predetermined curvature was imparted indicating that the 'zone' referred to in claim 1 was such area.

[17] If the clamp imparts a predetermined curvature, as I have already held to be the case, it at least serves as a holding means for that part of the hose constituting the curvature i.e. for at least one zone of the lower part of the hose. Counsel for the appellant conceded that to be the case.

[18] It follows that, subject to the patent being valid, the court *a quo* correctly held that the appellant infringed the patent.

VALIDITY

[19] The three grounds of attack on the validity of the patent are lack of novelty, obviousness and lack of clarity. The appellant no longer relies on a fourth ground of attack, namely inutility, which was dismissed by the court *a quo*. I shall deal with each of the three grounds in turn.

LACK OF NOVELTY

[20] In terms of s 61(c) of the Patents Act 57 of 1978 ('the Act') a patent may be revoked on the ground that the patent is not patentable. Section 25(1) provides that subject to the provisions of the section a patent may 'be granted for any new invention which involves an inventive step'. At the time of registration of the patent and in regard to the requirement that the invention must be new s 25(5) and (6) provided as follows:

'(5) An invention shall be deemed to be new if it does not form part of the state of the art immediately before the priority date of any claim to that invention.

(6) The state of the art shall comprise all matter (whether a product, a process, information about either, or anything else) which has been made available to the public (whether in the Republic or elsewhere) by written or oral description, by use or in any other way.'

Section 31(a) of Act 38 of 1997 substituted the words 'priority date of that invention' for the words 'priority date of any claim to that invention'. The amendment has no effect on the case.

[21] The appellant relied on two items of prior art for its attack on the novelty of the invention namely, on what has been referred to as the Rauma-Repola drawing and on GB Patent 2 163 403 A, ('the GB Patent') more particularly Fig 1 thereof. The two drawings are reproduced hereunder.

[22] The appellant submitted that the riser configurations depicted in these two drawings contained all the integers of claim 1 of the patent whereas the respondent disputed that it contained integer (v) i.e. it disputed that the drawings depicted holding means for a zone of the lower part of the hose connected to a stationary point consisting of a deadman.

[23] In *Netlon Ltd and Another v Pacnet (Pty) Ltd* 1977 (3) SA 840 (A) at 861H-862B Trollip JA said in regard to the requirement that an invention must be new:

‘[T]he defence (or objection) of anticipation relates to the claims and not to the description of the invention in the body of the specification in suit (see, too, the *Letraset* case, *supra* at pp. 264 - 5). The prior printed publication alleged to be anticipatory must be construed, for the exercise is primarily one of construing and comparing the two documents; moreover it must be construed as at the date of its publication to the exclusion of information subsequently discovered; the question then considered is whether the prior publication "describes" the invention in suit as claimed; that is, whether it sets forth or recites at least the latter's essential integers in such a way that the same or substantially the same process or apparatus is identifiable or perceptible and hence made known

or the same or substantially the same product can be made from that description in the prior publication; if the description in the prior document differs, even in a small respect, provided it is a real difference, such as the non-recital of a single essential integer, the anticipation fails; the opinions of expert-witnesses that the prior publication does or does not anticipate a claim in suit must be disregarded for that is for the Court to decide.’

[24] A court may and should nevertheless in appropriate cases have regard to the opinion of expert witnesses as to what is depicted in a drawing. In *C van der Lely NV v Bamfords Ltd* [1963] RPC 61 (HL) at 71, quoted with approval in *Letraset Ltd v Helios Ltd* 1972 (3) SA 245 (A) at 267D-E, Lord Reid said in regard to photographs:

‘The question is what the eye of the man with appropriate engineering skill and experience would see in the photograph, and that appears to me to be a matter for evidence. Where the evidence is contradictory the Judge must decide. But the Judge ought not, in my opinion, to attempt to read or construe the photograph himself; he looks at the photograph in determining which of the explanations given by the witnesses appears to be most worthy of acceptance.’

There are obviously photographs the interpretation of which requires no expertise. The passage should, in my view, be read subject to that qualification (see *Filta-Matix (Pty) Ltd v Freudenberg and Others* 1998 (1) SA 606 (SCA) at 615C-616C). The same approach should be adopted in the case of drawings.

[25] Larsen and Luppi were agreed that the risers depicted in the two drawings were flexible but disagreed that they were continuous. Luppi expressed the view that in both cases the riser base (11 in Fig. 1 of the GB patent) incorporated a deflection device with two flange connections, one for the vertical hoses and the other for the horizontal hoses depicted in the two drawings. Larsen on the other hand was of the opinion that the hoses depicted in the drawings were continuous from the surface support to the wellhead. Furthermore, that they were merely deflected at the riser base by a deflecting device connected to a stationary point consisting of a deadman, which, in the result, acted as a holding means for a zone of the lower part of the hose. The reason given by him for his opinion was that by having a flexible hose from the surface support to the wellhead one would avoid having connectors on both sides of the deflection device as those connectors had cost implications. He also expressed the opinion that the mere description in the GB Patent of item 11 as a deflection device indicated that it was the hose that was being deflected. Luppi, on the other hand, thought that it was the oil that was being deflected by the deflecting device.

[26] The court *a quo* found that Larsen was speculating and that he was not able to point to anything in the drawing which indicated that the hose was continuous. It found that Luppi's evidence was consistent with what was known in the industry, as at February 1988, as a Steep S configuration. For these reasons it held that it could, on the evidence, not be found that integer (v) was

present in the Rauma-Repola drawing or in Fig 1 of the GB patent.

[27] In my view there is no merit in the reasons given by Larsen for his conclusion. The deflection device may either be a device to deflect the hose or it may be a device for the deflection of oil flow. At the time when the drawings were produced the Steep S or Steep Wave configurations for flexible risers were well known and commonly used. In both these configurations a hose from the surface support was connected to a riser base on the seabed and another hose was used to connect the riser base to the wellhead. That was done notwithstanding the fact that those connections had cost implications. In these circumstances there seems to be no reason to interpret the two drawings as depicting, at the riser base, anything other than connections similar to those in the Steep S or Steep Wave configurations.

[28] It follows that the attack on the validity of the patent on the ground of lack of novelty correctly failed in the court *a quo*.

OBVIOUSNESS

[29] In regard to the requirement in s 25 (1) that an invention must involve an inventive step in order to be patentable, s 25(10) provided, before its amendment by s 31(d) of Act 38 of 1977:

‘Subject to the provisions of section 39(6), an invention shall be deemed to involve an inventive step if it is not obvious to a person skilled in the art, having regard to any matter which forms, immediately before the priority date of any claim to the invention, part of the state of the art by

virtue only of subsection (6) (and disregarding subsections (7) and (8).’

As in the case of s 25(5) the amendment substituted the words ‘immediately before the priority date of any claim to the invention’ for the words ‘immediately before the priority date of the invention’. Subsection 25(6) is quoted in para 17 above.

[30] The art we are concerned with is the design and, to a lesser degree, the installation of flexible riser systems for the transfer of oil between the seabed and the sea surface. As at the priority date various configurations of flexible risers were known and utilized. As stated in para 2 above those relevant for present purposes and considered to be the major flexible riser configurations at the time are known as the Free Hanging, Lazy S, Steep S, Lazy Wave and Steep Wave configurations and are illustrated in para 2.

[31] The disadvantages of the Lazy S and Lazy Wave configurations as opposed to the other two configurations were the length of the flexible riser, a particularly expensive piece of equipment, between the wellhead and the surface support and the bulk at the level of the seabed when a large number of hoses or of bundles of hoses were used. The disadvantage of the Steep S and Steep Wave configurations, on the other hand, was that each of the lifting hoses and the hose or hoses coming from the wellhead had to be connected to a previously installed base. The base needed to be heavy with large dimensions equipped with connection systems. The connection operations had to be performed by divers or with the aid of costly remote-controlled connecting equipment. It is common cause that the invention succeeded in overcoming these drawbacks.

[32] Having regard to the prior art the step taken by the respondent was to find a configuration, which resulted (as in the case of the Steep configurations) in a hose being used which was shorter than in the Lazy configurations, but which was nevertheless continuous as in the case of those configurations. It did so by employing a holding means for at least one zone of the lower part of the hose, connected to a stationary point consisting of a deadman and made to hold taut part of the hose located between the intermediate element and the holding means and made to impart to the hose in a vertical plane, a predetermined curvature whose concavity was directed toward a wellhead or similar structure located on the seabed. That is claimed to have constituted an inventive step.

[33] In *Mölnlycke AB and Another v Procter & Gamble Limited and Others* (no 5) [1994] RPC 49 (CA) at 113 Sir Donald Nicholls, Vice-Chancellor said in respect of similarly worded statutory provisions:

'In applying the statutory criterion and making these findings the court will almost invariably require the assistance of expert evidence. The primary evidence will be that of properly qualified expert witnesses who will say whether or not in their opinions the relevant step would have been obvious to a skilled man having regard to the state of the art. All other evidence is secondary to that primary evidence. In the past, evidential criteria may have been useful to help to elucidate the approach of the common law to the question of inventiveness. Now that there is a statutory definition, evidential criteria do not form part of the formulation of the question to be decided.'

The passage was quoted with approval in *Ensign-Bickford (South Africa) (Pty)Ltd and Others v AECI Explosives and Chemicals Ltd* 1999 (1) SA 70 (SCA) at 81E-F. The court *a quo* said in this regard:

'Previously it had been considered settled law that it is for the court to decide the question of obviousness and the evidence of expert witnesses

was held to be inadmissible - *Veasey v Denver Rock Drill and Machinery Co Ltd supra*¹ at 262; *Gentiruco case*² at 618A; *Burrell*³ p156-157.

Despite the views of *Burrell* at p157, it will be accepted that the law is as stated by the court in *Ensign-Bickford (SA) and Others v AECI Explosives and Chemicals Ltd supra*. It must be accepted that the Supreme Court of Appeal was aware of the legal position and despite the fact that the court did not expressly overrule the previous judgments it must have intended to change the law on this question.'

[34] The *court a quo* probably meant to say that the opinion as such of expert witnesses as to whether an invention was obvious was previously held to be inadmissible. In my view the passage in the *Ensign-Bickford* case was not intended to be interpreted so as to change the law in respect of the admissibility of expert evidence in regard to the question of obviousness. It is the technical evidence by expert witnesses in respect of the nature of the step claimed to have been inventive, the state of the art as at the priority date relevant to that step and the respect or respects in which the step goes beyond or differs from that state of the art, which constitutes the primary evidence. It is clear from a reading of the *Ensign-Bickford* case, at 81D-83A, that the court considered the question of obviousness on that basis. The technical evidence of the witnesses was considered without any reference to their opinions as to whether the invention was obvious. Expert witnesses who are either of the opinion that the invention is obvious or that it is not obvious would almost invariably give the primary

¹ 1930 AD 244.

² *Gentiruco AG v Firestone SA (Pty) Ltd* 1972 (1) SA 589 (A).

³ *Burrell's South African Patent and Design Law*, 3rd ed.

technical evidence. In these circumstances it may sometimes be difficult to avoid them expressing the conclusion that the step is either obvious or not obvious, but that would do no harm so long as it is borne in mind that that conclusion is immaterial.

[35] Larsen's evidence was tendered, amongst other reasons, to prove that the improvement effected by the respondent was obvious. In this regard he relied on the Rauma-Repola drawing and Fig 1 of the GB patent as well as on the Bechtel patent. The Bechtel patent relates to systems of flexible risers and to methods of installing them, more particularly to the configuration ('the Bechtel configuration') depicted in the figure below.

In the Bechtel configuration the intermediate element consists of a buoyancy chamber connected by tie rods to the seabed. The upper end of the tether is connected to the intermediate element. Movement of the riser is restrained by various means of attaching it to the intermediate element thereby making it possible to design the upper and lower legs of the riser to optimum lengths. It is common cause that, like the pliant wave configuration, the Bechtel configuration overcame the disadvantages of the Lazy and Steep configurations.

[36] Larsen testified that the Lazy S and Bechtel configurations differed from the configuration according to claim 1 in only one respect namely that the upper end of the tether was connected to the intermediate buoyancy element instead of

to a portion of the hose below the intermediate element. As at the priority date the buoyancy system used in the Bechtel configuration as well as a buoyancy system consisting of distributed buoyancy modules, as in the case of the Wave configurations, were known. The buoyancy modules could, like the buoyancy chamber, be tied down to a base on the seabed. In that case the logical place to position the tether would be on the hose below the lowest buoyancy module, simply because a buoyancy module would have no function if positioned below the connecting point of the tether. He further expressed the opinion that if the hose in the Rauma-Repola drawing or in Fig 1 of the GB patent was not continuous but had to be connected to the base on the seabed, it would have required no inventive ingenuity from a person skilled in the art to realize that it could easily be made to be continuous by the use of an elbow as a holding means, as is required by claim 7. Claim 7 reads:

‘Apparatus according to claim 1, wherein said holding means comprise a neck solid with the deadman performing a holding and guiding, in the vertical plane, of the corresponding part of the hose, said hose being held in the deadman by a collar.’

[37] Luppi pointed out that the invention solved a problem in a way none of the prior art suggested. He conceded that the Bechtel patent also overcame the drawbacks of the Lazy and Steep configurations referred to but said that the invention did so in a more elegant way. In the event the pliant wave configuration is being extensively used while the Bechtel configuration is not used at all.

[38] The *court a quo* held:

‘The configurations used had settled into the well-known configurations referred to in this judgment. No one had conceived of a configuration which used elements of the Lazy and Steep configurations. After the patent was registered it has been used extensively and with apparent commercial success.

The attack on the patent based on obviousness is therefore not upheld.’

[39] The appellant submitted that the *court a quo* should have found that the invention was obvious on at least the following grounds:

- 1 The only difference between the patent and the Bechtel patent is the use of distributed buoyancy instead of a single buoyancy element.
- 2 The only difference between the Rauma-Repola configuration, Fig 1 of the GB patent and the embodiment disclosed in Fig 7 of the specification is that in Fig 7 the hose is continuous through the elbow or neck.
- 3 Both types of buoyancy as well as continuous hoses were well known at the time.

[40] The Bechtel configuration is in essence a reverse Lazy S configuration. In the Bechtel patent specification the invention is summarized as follows: ‘The present invention is concerned to allow lazy S installations to be made comparatively readily on a pre-positioned midwater support. . . .’. The Rauma-Repola drawing and Fig 1 of the GB patent, on the other hand, would appear to depict nothing other than a Steep S configuration. The appellant submitted that

there was virtually no difference between the configuration according to the invention and the Lazy configuration but also submitted that there was virtually no difference between the configuration according to the invention and the Steep configuration which differs substantially from the Lazy configuration. The fallacy of the submission is demonstrated by the two comparisons. The configuration according to the invention is in effect a hybrid of the Lazy and Steep configurations. By marrying the two configurations the inventor solved problems associated with the Lazy as well as the Steep configurations.

[41] Although the step taken by the inventor was a simple one I am, having regard to the technical evidence, unpersuaded that it was not inventive. In the light of the secondary evidence I am persuaded that it was inventive. The invention solved a problem which had huge financial implications to companies with substantial financial resources. As at the priority date the Steep configurations were commonly being used. The installation of these configurations required the use of divers and, depending on the conditions, costly remote-controlled connecting equipment. That would not have been the case if it would have been obvious to 'a person skilled in the art' that it could be avoided by simply employing a holding means in the way suggested by the patent. It is true that the Bechtel patent overcame the aforesaid disadvantages of the Steep and Lazy configurations but it did so in a less satisfactory way than the invention. Bechtel is a very big engineering company, which recognized the

disadvantages of the existing configurations and was attempting to alleviate those problems. Yet, the solution proposed by the patent would appear not to have been obvious to Bechtel's designers.

[42] The court *a quo* therefore correctly dismissed the attack on the validity of the patent on the basis that the invention was obvious.

LACK OF CLARITY

[43] Section 61(1)(f) of the Act provides that a patent may be revoked on the ground that the claims of the complete specification are not clear.

[44] The appellant contended that the reference to 'at least one zone' in claim 1 was not clear in that the phrase contemplates more than one zone of the hose. Integer (v) requires the apparatus to be characterized 'by the fact that it comprises holding means for at least one zone of said lower part of the hose'. I have already held that that part of the hose constituting the curvature is a zone of the lower part of the hose. The fact that the claim contemplates more than one zone in no way renders it problematical to identify that curvature or any other part of the hose as a zone. In my view there is no merit in the submission.

[45] Claim 1 reads: 'Apparatus . . . comprising . . . a part of the hose between said intermediate element and the sea bed being made taut by being fastened to a stationary point on the bed characterized by the fact that it comprises holding means for . . . and made to hold taut part of the hose located between the intermediate element and the holding means' The appellant submits that

the ‘part of the hose located between the intermediate element and the holding means’ fell within the ‘part of the hose between said intermediate element and the holding means’; that it was unclear what the purpose was of the second reference to a part of the hose being held taut; and that it was unclear how the two references to parts of the hose which were described differently, could be reconciled.

[46]In my view there is no merit in these submissions. The first reference to ‘part of the hose’ is in the context of the hose between the intermediate element and the seabed being made taut by being fastened to a stationary point on the seabed while the second reference is in the context of the holding means being made to hold taut part of the hose located between the intermediate element and the holding means. In determining whether an infringement had been committed the question would be whether part of the hose between the intermediate element was being made taut by being fastened to a stationary point on the seabed and whether the holding means referred to in integer (v) had been made to hold taut part of the hose located between the intermediate element and the holding means. There is no suggestion to be found in the claim or in the rest of the specification that the parts referred to may not be the same part.

[47]In the result the appeal is dismissed with costs including the costs of two counsel.

P E STREICHER
JUDGE OF APPEAL

Harms, JA)
Scott, JA)
Nugent JA)
Jones, AJA)

concur