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Datasheet for the decision of 18 March 2026

Case Number: T 0555/24 - 3.2.08

Application Number: 08709691.3

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IPC: E06C1/56

Language of the proceedings: EN

Title of invention:
ROPE LADDER AND METHOD AND APPARATUS FOR ITS PRODUCTION

Patent Proprietors:
Theodosis, Andreas
Panoutsopoulos, Merkouris

Opponent:
PTR Holland BV

Relevant legal provisions:
EPC Art. 54, 56, 104(1)
EPC R. 103(1)(a)

Keyword:
Novelty - (yes)
Inventive step - (yes)
Apportionment of costs - (no)
Reimbursement of appeal fee - (no)

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Chambres de recours

Boards of Appeal of the
European Patent Office
Richard-Reitzner-Allee 8
85540 Haar
GERMANY
Tel. +49 (0)89 2399-0

Case Number: T 0555/24 - 3.2.08

D E C I S I O N
of Technical Board of Appeal 3.2.08
of 18 March 2026

Appellant: (Opponent)	PTR Holland BV Dintelweg 107 3198 LB Rotterdam Europoort (NL)
Representative:	Taneja, Bipin Southern Cross Radex Building Rotterdamseweg 183-C 2629 HD Delft (NL)
Respondent: (Patent Proprietor 1)	Theodosis, Andreas Nikitara Str. 32 182 33 AG.I. Rentis (GR)
Respondent: (Patent Proprietor 2)	Panoutsopoulos, Merkouris Nikitara Str. 32 182 33 AG. I .Rentis (GR)
Representative:	Lambacher, Michael V. Füner Ebbinghaus Finck Hano Patentanwälte Mariahilfplatz 3 81541 München (DE)
Decision under appeal:	**Decision of the Opposition Division of the European Patent Office posted/electronically transmitted on 15 February 2024 rejecting the opposition filed against European patent No. 2134919 pursuant to Articl e 101(2) EPC.**

Composition of the Board:

Chairwoman	P. Acton
Members:	C. Vetter
	F. Bostedt
	M. Foulger
	K. Kerber-Zubrzycka

Summary of Facts and Submissions

I. The appeal was filed by the opponent (appellant) against the decision of the opposition division to reject the opposition filed against the patent in suit.

II. The opposition division had decided, *inter alia*, that:

(1) the subject-matter of the claims as granted was novel and involved an inventive step, and
(2) each party bears its own costs.

III. Oral proceedings were held before the Board.

IV. The appellant (opponent) requested that the decision under appeal be set aside and the patent be revoked. In addition, the appellant requested apportionment of costs for reasons of equity and the reimbursement of the appeal fee due to a substantial procedural violation.

The respondents (patent proprietors) requested that the appeal be dismissed and the patent be maintained as granted (main request), or, in the alternative, that the patent be maintained according to one of auxiliary requests 1 to 5 filed with the reply to the appeal on 24 October 2024.

V. Claims 5, 1 and 3 of the main request read as follows (feature designation added by the Board):

Claim 5 (product):

M1 A rope ladder comprising a desired plurality of steps (1) equidistantly arranged at a fixed spacing,
M2 successively connected by means of ropes (2) that pass through predetermined apertures (1a, 1b) at both side ends of steps (1),
M2.1 said ropes (2) being used in the connection of successive steps (1) and in creating the handgrip means of the user who uses the step ladder to embark in the life boat when leaving the vessel or vice versa,
M2.2 each one of said ropes (2) being cut at a length exceeding double the desirable length of the rope ladder and subsequently being folded at the middle (2c) thereof thereby forming two equivalent lengths of rope (2a, 2b) that run in parallel from the median point of folding (2c)

wherein, said rope ladder is characterized in that

M3 due to restricted flexibility of the rope, a hole (2d) is being formed at the folding point (2c), said hole (2d) providing a means of connecting and winding up the rope ladder around a drum located at the deck of the vessel adjacently a life boat,
M4 said two equivalent lengths of rope (2a, 2b) of each rope (2) successively passing through said apertures (1a, 1b) at each side of each one of the plurality of steps (1),

M5 a spacer block (3) being applied at both sides, above and below each one of the plurality of steps (1) with the insertion of a protruding shaft (13) of each spacer block (3) within an aperture (1c) located intermediately in between apertures (1a, 1b) of each step (1),
M6 whereby said two parallel running lengths (2a, 2b) of each rope (2) are inserted within the cavities formed by the converging legs (3a, 3b) of each spacer block (3) thereby forming a single rope member (2a-2b) at the exit from the spacer block (3),
M7 a metallic clamping socket (4) being employed in each single rope member (2a-2b) at the exit of each spacer block (3) so that the two parts (2a, 2b) of the rope enter respectively within channels (14a, 14b) being formed in the clamping socket (4),
M7.1 said clamping socket (4) being initially an H-sectioned metallic clamping socket (4) being closed by means of a press assembly thereby receiving the form of a closed ellipse so as to encage said two parallel running lengths of rope (2a, 2b) and provide a continuous length of sufficiently rigid rope creating the handgrip means of the user who uses the step ladder to embark in the life boat or into the vessel.

Claim 1 (apparatus):

N1 Apparatus for the production of a rope ladder comprising a desired plurality of steps (1) equidistantly arranged at a fixed spacing and successively connected by means of ropes (2) that pass through predetermined apertures at both side ends of steps (1),

N2 the apparatus comprising a workbench of an elongated rectangular configuration formed by means of members (11),
N3 a plurality of pairs of U-sectioned metallic members (10) being mounted in the traverse direction along the workbench at equidistantly spaced points,
N3.1 channels (10a) being formed in between each one of said pairs of U-sectioned metallic members (10) for the reception of steps (1), said steps (1) thereby being provided at equidistantly spaced points along said workbench,
N4 said steps (1) extending beyond the longitudinally oriented parallel metallic members (11) of the workbench and provided with an arrangement of apertures (1a, 1b, 1c) at each one of the extending ends thereof,

the apparatus being characterized by that

N5 a first arrangement of a pair of longitudinally extending parallel rails (12, 13) is provided on either end of the longitudinally oriented parallel metallic members (11) of the workbench,
N6 a sliding carriage (20) that is provided with a first arrangement of pairs of wheels (22, 23) being mounted onto said first arrangement of rails (12, 13),
N7 a press assembly (17) being mounted onto an internal platform of said sliding carriage (20) that is provided with said pairs of wheels (22, 23),
N6.1 said pairs of wheels allowing reciprocating sliding movement along the corresponding rails (12, 13),

N8 said internal platform being capable of performing a sliding transverse movement onto a second arrangement of pairs of wheels (24, 25) along a provision of a second arrangement of rails (14, 15),
N8.1 wherein said second arrangement of rails (14, 15) is oriented perpendicularly with respect to said first arrangement of rails (12, 13) respectively and said second rails (14, 15) are interconnected by means of metallic laminates (16),
N7.1 said press assembly (17) being employed for effecting pressing for the closure of H-sectioned metallic clamping sockets (4) within which are encaged said ropes (2), above and below, on either side of each one of said plurality of steps (1),
N7.2 said press assembly (17) comprising a pair of jaws (18, 19) inside which are being enclaved said metallic clamping sockets (4) in order to close by means of the pressure exerted thereupon by said pair of jaws (18, 19) through a pressing operation of said press assembly (17) applying a piston/ cylinder arrangement (27) being provided above the upper one of said pair of jaws (18, 19).

Claim 3 (method)

O1 Method for the production of a rope ladder comprising a desired plurality of steps (1) equidistantly arranged at a fixed spacing, successively connected by means of ropes (2) that pass through predetermined apertures at both side ends of steps (1),
O2 said ropes (2) being used in the connection of successive steps and in creating the handgrip means of the user who uses the step ladder to embark in

the life boat when leaving the vessel or vice versa, said method comprising the following steps:
O3 cutting a pair of thick ropes (2) of a durable quality, each at a length exceeding double the desirable length of the rope ladder,
O3.1 each one of said pair of ropes (2) being folded at the middle (2c) thereof thereby forming two equivalent lengths of rope (2a, 2b) that run in parallel from the median point of folding (2c)
O3.2 wherein, due to restricted flexibility of the rope, a hole (2d) is being formed, said hole (2d) providing a means of connecting and winding up the rope ladder around a drum located at the deck of the vessel adjacently a life boat;
O4 placement of a first batch of a desired number of steps (1) within an equivalent number of step receiving channels (10a) along the workbench;
O5 successive passage of said two parallel running lengths (2a, 2b) of each rope (2) at each side of the plurality of steps (1) through successive apertures (1a, 1b) provided on either side of each one of the plurality of steps (1);
O6 applying spacer blocks (3) at both sides, above and below each one of the plurality of steps (1) with the insertion of a protruding shaft (13) of each spacer block (3) within an aperture (1c) located intermediately in between apertures (1a, 1b) of each step (1)
O6.1 and convergence of said two parallel running lengths (2a, 2b) of each rope (2) into the cavities formed by the converging legs (3a, 3b) of each spacer block (3) thereby forming a single rope member (2a-2b) at the exit from the spacer block (3);
O7 applying a metallic clamping socket (4) in each single rope member (2a-2b) at the exit of each

spacer block (3) so that the two parts (2a, 2b) of the rope enter respectively within channels (14a, 14b) being formed in the H-sectioned metallic clamping socket (4);

said method being characterized by

O8 sliding a carriage (20) of a press assembly (17) of the apparatus based onto a first arrangement of pairs of wheels (22, 23) along a first arrangement of longitudinally extending rails (12, 13) in the longitudinal direction of the workbench
O8.1 and subsequently sliding an internal platform of said carriage (20) whereupon said press assembly (17) is based onto a second arrangement of pairs of wheels (24, 25) along a second arrangement of rails (14, 15) in the traverse direction of the workbench,
O8.2 wherein sliding of said carriage (20) that is provided with said first arrangement of pairs of wheels (22, 23) in the longitudinal direction brings said press assembly (17) coaxially along a selected item of said plurality of metallic clamping sockets (4)
O8.3 and sliding of said internal platform of carriage (20) in the transverse direction of the workbench brings a pair of pressing jaws (18, 19) of said press assembly (17) above and below said selected item of said plurality of metallic clamping sockets (4);
O9 pressing a manual button or foot pedal activation means of said press assembly (17) so as to effect movement of the upper jaw (18) by means of a cylinder/piston arrangement (27) so as to enclave and effect pressure closure of said

selected item of said plurality of clamping sockets (4) in between said jaws (18, 19),

O9.1 said clamping socket (4) thereby receiving the form of a closed ellipse and said pair of parallel running rope lengths (2a, 2b) becoming a rigid single rope member (2a-2b) on either side of each one of said plurality of steps (1);

O10 repetition of the previous aforementioned pressing step for the successive closure of all metallic clamping sockets (4) and exporting the ready made portion of the rope ladder comprising the selected batch quantity of steps (1) from the workbench, and

O11 placement of a next batch quantity of said selected number of steps (1) within said equivalent number of step receiving channels (10a) along the workbench and repetition of the process up to termination of the last step of the rope ladder.

VI. In the present decision, reference is made to the following evidence:

D1: DVD of TV broadcast of 24 December 2003, RTV Rijnmond

D3: Greek national industrial design right application GR20040600125

D9: Technical drawing of an H-sectioned metallic clamp

D21: Fathom Safety article: Pilot Ladder Manufacture Hand Whipping vs Metal Clamps

VII. The arguments of the parties relevant to the decision are set out below in the Reasons for the Decision.

Reasons for the Decision

1. Claim 5 - novelty

1.1 Claim 5 relates to a rope ladder in which a specific metallic clamping socket is employed to clamp the rope above and below each step. The metallic clamping socket initially has the shape of an H, which is closed by means of a press assembly to take the form of a closed ellipse, thereby encaging two parallel running lengths of rope (feature M7.1). An example of the clamping socket is shown (under reference numeral 4) in Figures 3 and 4 of the patent in suit, which are reproduced in part below.

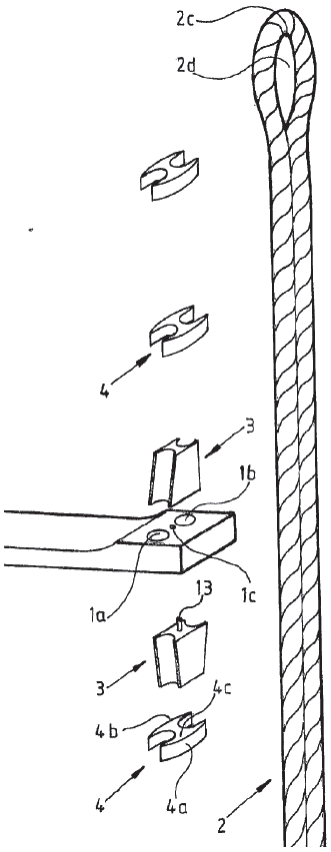

Figure 3 (part)

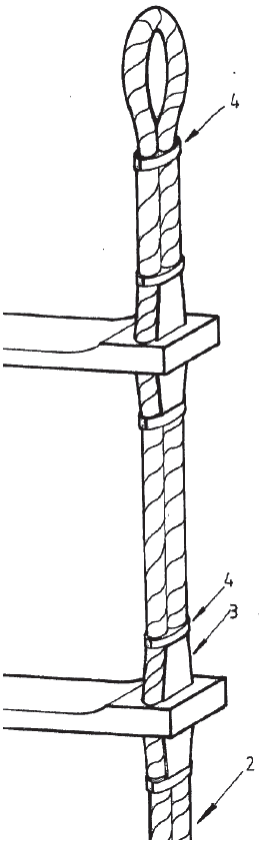

Figure 4 (part)

1.2 The appellant argued that the term "closed ellipse" in feature M7.1 should be interpreted broadly, especially since the claim did not require the ellipse to be "fully" closed. The appellant stressed that the description of the patent in suit did not define what "closed" means. Notably, it did not contain any disclosure requiring the ends of the clamping socket to touch. From the drawings, it was not discernible either that the ends touched each other.

According to the appellant, in practice it was not possible to clamp the ends of the clamping socket such that they effectively touched each other. It was only possible to clamp them such that they were close to each other, though the gap present between them was not necessarily visible to the naked eye.

1.3 In the respondents' interpretation of feature 7.1, the expression "closed ellipse" required that the ends of the clamping socket are in close proximity to each other such that one could not see through between them with the naked eye.

1.4 The expression "closed ellipse" in feature M7.1 is to be construed from the perspective of the skilled person in an objective manner. It was common ground that actual *touching* of the ends of the clamping socket was not necessarily required to satisfy that the ellipse is "closed" within the meaning of the claim. This is also what a skilled person reading the claim would understand, particularly since the closing is effected by means of a press assembly (product-by-process feature), and not by means of an integral material joint such as welding. However, the technical meaning of the expression "closed ellipse" - which a skilled person would not distinguish from that of a "fully

closed ellipse" - excludes embodiments in which there is a *significant gap* between the ends of the clamping socket. The ends of the socket must be in a certain proximity to each other for the ellipse to be regarded as "closed".

The description and the drawings of the patent in suit do not call this interpretation into question. In fact, the description does not define what the patent understands under "closed ellipse". The drawings of the patent, in turn, are schematic illustrations from which no conclusion can be drawn regarding the distance, if any, between the ends of the clamping socket.

Hence, the expression "closed ellipse" in feature M7.1 requires that the ends of the clamping socket are at least in a certain proximity to each other and it excludes that a significant gap exists between them.

1.5 D1 is a video that was broadcast on Dutch TV in 2003. It shows various rope ladders where clamping sockets within the meaning of feature M7.1 are employed. A screenshot of the video at minute 1:28 is depicted in part below.

1.6 It is common ground that the ends of the clamping sockets shown in D1 are distanced from each other and that the rope is visible through the gap between them.

1.7 The appellant argued that the gap in the clamping socket of D1 was only 2 mm and therefore a visually small difference in light of the overall length of the clamping socket of 47 mm (D9).

1.8 However, a gap of 2 mm is not negligible, neither visually nor technically. Visually, the gap is so large that the rope can be clearly seen through it with the naked eye. Technically, the gap is not merely the result of production or measurement inaccuracies. On the contrary, as the respondents pointed out with reference to the testimony of Mr Stuip in the proceedings before the opposition division (see page 41, last paragraph of the Minutes of Taking of Evidence), the gap is intentional, as it is necessary

to ensure that sufficient clamping force is applied to the rope.

For these reasons, the gap between the ends of the clamping socket of D1 is to be regarded as significant.

Consequently, the clamping sockets in D1 do not have the form of a closed ellipse as required by feature M7.1, so that feature M7.1 is a distinguishing feature over the disclosure of D1.

1.9 Thus, the subject-matter of claim 5 is novel over D1 already due to the distinguishing feature M7.1.

2. Claim 5 - inventive step

2.1 Inventive step when starting from D1

2.1.1 The appellant argued that a rope ladder with a clamping socket in the form of a closed ellipse as required by feature M7.1 did not offer any technical advantages over rope ladders of the prior art, in particular those disclosed in D1. Therefore, no inventive step should be acknowledged on the basis of distinguishing feature M7.1.

2.1.2 However, as the respondents correctly pointed out, a closed ellipse in accordance with feature M7.1 does have a technical effect: The rope is fully enclosed within it, and the edges of the clamping socket ends are not exposed. This helps to prevent damage to the rope as well as injuries to the user's hands caused by exposed edges of the clamping socket ends.

Therefore, the objective technical problem to be solved is to provide a rope ladder in which the clamping

socket is improved and the risk of damage to the rope or injury to the user's hands is reduced.

2.1.3 The appellant referred to D3 as a combination document which allegedly renders the claimed solution obvious.

D3 is a published Greek design right application of a rope ladder with metallic clamping sockets. The photograph of Representation 9, which is reproduced below, shows a close-up of such a metallic clamping socket.

2.1.4 It is undisputed that there is a gap between the ends of the clamping socket of D3 through which the rope can clearly be seen. In this respect, the teaching of D3 does not differ from that of D1. Consequently, D3 cannot provide any hint, suggestion or teaching to the skilled person to modify the clamping socket of D1 such that it has the form of a closed ellipse as required by feature M7.1.

Therefore, the claimed solution in accordance with feature M7.1 is not rendered obvious to the skilled person when starting from D1 in combination with D3.

2.1.5 The appellant further referred to D21 which, in their view, documented the common general knowledge of the skilled person at the priority date of the patent in suit.

D21 discloses on page 4 under the headline "Machine Clamped Aluminium Ferule Pilot Ladders":

> If the clamp continued to force the open ends of the ferule together the clamp would damage the rope or even part it.

2.1.6 Even if one accepted that D21 reflects the common general knowledge at the priority date, it would not render the claimed solution obvious. In fact, D21 expressly teaches away from it by stating that the rope could be damaged or even parted if the ends of the clamping socket are forced together.

Consequently, the claimed solution in accordance with feature M7.1 is also not rendered obvious to the skilled person when starting from D1 in combination with the common general knowledge as documented by D21.

2.2 Inventive step when starting from D3

2.2.1 The appellant also referred to D3 as a starting point for an inventive step attack.

2.2.2 As discussed above (see point 2.1.4), D3 discloses a rope ladder with metallic clamping sockets having a gap between their ends through which the rope can clearly be seen. In this respect, the disclosure of D3 does not differ from that of D1, so that at least feature M7.1 is a distinguishing feature for the same reasons as discussed with regard to D1 (see point 1.8).

Therefore, when starting from D3 as the closest prior art, the above considerations with respect to the objective technical problem equally apply (see point 2.1.2).

2.2.3 The appellant referred to D1 as a combination disclosure allegedly rendering the claimed solution according to feature M7.1 obvious.

2.2.4 However, also in D1 there is a significant gap between the ends of the clamping sockets so that they do not have the form of a closed ellipse either (see point 1.8).

Consequently, D1 cannot provide any hint, suggestion or teaching to the skilled person to modify the clamping socket of D3 such that it has the form of a closed ellipse as required by feature M7.1.

Therefore, the claimed solution in accordance with feature M7.1 is also not rendered obvious to the skilled person when starting from D3 in combination with D1.

3. Claim 1 - inventive step

3.1 D1 discloses an

> **N1** Apparatus for the production of a rope ladder comprising a desired plurality of steps equidistantly arranged at a fixed spacing and successively connected by means of ropes that pass through predetermined apertures at both side ends of steps.

3.2 It is undisputed that D1 does not disclose

- U-sectioned metallic members according to feature N3,
- channels for receiving steps according to feature N3.1,
- a first arrangement of parallel rails according to feature N5,
- a sliding carriage according to features N6 and N6.1,
- a press assembly mounted onto an internal platform of said sliding carriage according to features N7, N7.1 and N7.2,
- a sliding movement of the carriage according to feature N8, and
- a second arrangement of rails according to feature N8.1.

3.3 The appellant argued that no technical advantage was associated with these distinguishing features. They further argued that the claimed solution according to claim 1 did not go beyond a mere automation of the apparatus known from D1. According to the appellant, such automation was obvious to the skilled person even without any documented evidence.

3.4 However, as correctly pointed out by the respondents, the technical effects of the above distinguishing features are at least the following:

- The use of U-sectioned metallic members and specific channels according to features N3 and N3.1 enhances the precision and speed of the step arrangement.

- The specific implementation of the press assembly of features N7, N7.1, N7.2 ensures uniform and stable pressure application.
- The rail arrangements and sliding carriage according to features N5, N6, N6.1, N8 and N8.1 allow for fast and flexible movement of the press assembly.

Therefore, the objective technical problem is to provide an apparatus for the production of a rope ladder that allows for a faster and more reliable production.

3.5 Moreover, the distinguishing features outlined above go far beyond the mere automation of known features. The U-sectioned metallic members and specific channels according to features N3 and N3.1, the specific implementation of the press assembly according to features N7, N7.1, N7.2 and the rail arrangements and sliding carriage according to features N5, N6, N6.1, N8 and N8.1 are all *structural* features. Implementing these features in the apparatus known from D1 would result in an apparatus that is entirely different, both structurally and in terms of its concept of use.

Therefore, starting from the apparatus of D1, the skilled person had no motivation and was not provided with any hint or suggestion to modify it in accordance with the above distinguishing features.

Consequently, the subject-matter of claim 1 is not rendered obvious to the skilled person when starting from D1.

4. Claim 3 - inventive step

4.1 As correctly pointed out by the appellant, the method for the production of a rope ladder according to claim 3 largely amounts to a use of the apparatus of claim 1, since the claimed method comprises, among other things, the following (emphasis added):

> **O4** placement of a first batch of a desired number of steps (1) within an equivalent number of step receiving channels (10a) along the workbench;
> **O8** sliding a carriage (20) of a press assembly (17) of the apparatus based onto a first arrangement of pairs of wheels (22, 23) along a first arrangement of longitudinally extending rails (12, 13) in the longitudinal direction of the workbench
> **O8.1** and subsequently sliding an internal platform of said carriage (20) whereupon said press assembly (17) is based onto a second arrangement of pairs of wheels (24, 25) along a second arrangement of rails (14, 15) in the traverse direction of the workbench,
> **O8.2** wherein sliding of said carriage (20) that is provided with said first arrangement of pairs of wheels (22, 23) in the longitudinal direction brings said press assembly (17) coaxially along a selected item of said plurality of metallic clamping sockets (4)
> **O8.3** and sliding of said internal platform of carriage (20) in the transverse direction of the workbench brings a pair of pressing jaws (18, 19) of said press assembly (17) above and below said selected item of said plurality of metallic clamping sockets (4);

4.2 It is undisputed that the above quoted features O4, O8, O8.1, O8.2 and O8.3 are distinguishing features over the disclosure of D1.

4.3 Therefore, the above observations with respect to the apparatus of claim 1 equally apply to the method of claim 3.

The objective technical problem can be formulated as providing a method for the production of a rope ladder that allows for a faster and more reliable production.

4.4 For the reasons set out above (point 3.5), the subject-matter of claim 3 is not rendered obvious to the skilled person when starting from D1.

5. Public availability of D1

5.1 As can be seen from the above, the disclosure of D1 does not affect the patentability of the subject-matter of claims 5, 1 and 3 of the patent in suit.

5.2 Therefore, the question of whether D1 was publicly available before the priority date of the patent in suit can be left open.

6. Apportionment of costs

6.1 The appellant argued that a different apportionment of costs was justified for reasons of equity, alleging inequitable conduct on the part of the respondents, in particular concerning the origin of the rope ladder depicted in D3.

6.2 Pursuant to Article 104(1) EPC, each party shall, as a rule, bear the costs it has incurred, unless a

different apportionment is justified for reasons of equity. Such circumstances are not present in the case at hand. Indeed, there is no evidence of improper or abusive conduct on the part of the respondents. Not only are the appellant's allegations regarding the origin of the rope ladder depicted in D3 unsubstantiated. Their impact on the present proceedings also remains unclear.

6.3 Therefore, the Board sees no reason to depart from the principle set out in Article 104(1) EPC.

7. Reimbursement of the appeal fee

7.1 The appellant argued that the appeal fee should be reimbursed on the basis that the opposition division committed substantial procedural violations, in particular by not hearing certain witnesses, by limiting the appellant's right to be heard, and by not admitting certain items of evidence.

7.2 Pursuant to Rule 103(1)(a) EPC, the appeal fee can only be reimbursed if the appeal is deemed allowable.

7.3 As the appeal is to be dismissed for the aforementioned reasons, the appeal fee cannot be reimbursed.

Order

For these reasons it is decided that:

1. The appeal is dismissed.
2. The request for apportionment of costs is refused.
3. The request for reimbursement of the appeal fee is refused.

The Registrar: The Chairwoman:

C. Moser P. Acton

Decision electronically authenticated