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Anmeldenummer / Filing No / N° de la demande : 79 301 857.3

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Bezeichnung der Erfindung: Manufacture of printing sleeves
Title of invention:
Titre de l'invention :

Klassifikation / Classification / Classement : B41C 1/18, B41N 1/20

## ENTSCHEIDUNG / DECISION
vom / of / du 7 February 1990

Anmelder / Applicant / Demandeur :

Patentinhaber / Proprietor of the patent / Titulaire du brevet : DRG (UK) Ltd.

Einsprechender / Opponent / Opposant : Koenig & Bauer A.G.

Stichwort / Headword / Référence : Sleeves/DRG

EPÜ / EPC / CBE Art. 54, 56 EPC

Schlagwort / Keyword / Mot clé : "Novelty (yes)"
"Inventive Step (yes)"

**Leitsatz / Headnote / Sommaire**

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Case Number : T 155 /87 - 3.2.1

# D E C I S I O N
## of the Technical Board of Appeal 3.2.1
## of 7 February 1990

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Decision under appeal :
Decision of the Opposition Division of the European Patent Office dated 4 November 1986 (issued on 11 February 1987) rejecting the opposition filed against European patent No. 0 009 360 pursuant to Article 102(2) EPC.

Composition of the Board :

Chairman : P.E.M. Delbecque
Members : C.T. Wilson
F. Benussi

## Summary of Facts and Submissions

I. European patent No. 0 009 360 was granted on 1 February 1984 with ten claims on the basis of European patent application No. 79 301 857.3. The independent claims, Claims 1 and 4, are worded as follows:

"1. A printing sleeve for fitting to a printing roll one end of which is of slightly larger diameter than the other end, the sleeve being similarly dimensioned so that it can be mounted on the roll by sliding it on lengthwise until it covers fluid outlet openings in the roll intermediate the ends of the roll, applying fluid under pressure to the outlets to slightly expand the sleeve, and then sliding the sleeve the rest of the way onto the roll; characterised in that the sleeve (10) is made entirely of metal and has a non-electrolytically deposited inner metal layer (41, 43, 48), which contacts the roll and has a cylindrical outermost surface, and an etchable electro-plated outer metal layer (42).

4. A method of making a printing sleeve for fitting to a printing roll one end of which is of slightly larger diameter than the other end, the sleeve being similarly dimensioned so that it can be mounted on the roll by sliding it on lengthwise until it covers fluid outlet openings in the roll intermediate the ends of the roll, applying fluid under pressure to the outlets to slightly expand the sleeve, and then sliding the sleeve the rest of the way onto the roll; characterised in that the method comprises taking a generally cylindrical mandrel (38) the external diameter of which is slightly larger at one end than the other, coating the outside surface of the mandrel

with a release agent (39), applying non-electrolytically a first layer (41, 43, 48) of metal over the outside surface of the mandrel, grinding the outside surface of the first metal layer to provide it with a uniform external diameter, and electro-plating an etchable second metal layer (42) onto the first metal layer."

II. The patent was opposed in due time and form on 30 October 1984. The Opponent requested revocation of the patent in its entirety on grounds that its subject-matter does not meet the requirements of Articles 52 to 56 EPC. In support of this request, the Opponent relied on a prior use in the form of a "Stahlstichdruckwerk" which was delivered to the firm Harrison & Sons Ltd. in Great Britain in the period between 30 November 1971 and 25 April 1972 without any obligation to secrecy. In this context, the Opponent submitted two drawings entitled "Formzylinderkörper" and "Formzylindermantel", which show the printing cylinder and the printing roll used in the delivered machine. The Patentee admitted that the equipment shown in the two drawings belongs to the prior art.

During an oral proceedings, the Chairman of the Opposition Division indicated that late evidence submitted by the Opponent and relating to US-A-4 024 045 which was already dealt with in substantive examination proceedings would not be admitted into the proceedings by the Opposition Division under the provisions of Article 114(2).

III. The Opposition Division rejected the opposition in a decision notified on 11 February 1987. According to the decision the subject-matter of the independent claims was novel since none of the cited prior art had disclosed all the features of the process. The closest state of the art,

the prior use, differed from the subject-matter of Claims 1 and 4, in that it did not disclose an inner metal layer which is respectively non-electrolytically deposited or applied non-electrolytically over the outside surface of the mandrel. Similarly, the disclosure of BE-A-856 427, referred to in the patent, is used to form the prior art parts of both independent claims, which therefore differ from this disclosure by their characterising features. Clearly even a combination of this cited prior art would not lead to the subject-matter of the independent claims.

IV. The Appellant (Opponent) filed an appeal against this decision on 9 April 1987 having paid the appropriate fee on the day before, and submitted the Statement of Grounds on 19 June 1987. The Appellant argued substantially as follows:

(a) The expression in Claim 1, "has a non-electrolytically deposited inner metal layer" means "has an inner metal layer, which is non-electrolytically produced".

(b) The thickness of this layer is not specified in the patent except when produced by spraying.

(c) The strength of the sleeve wall is determined by the printing process for which it is intended.

(d) Both the sleeve according to the present patent and that of the prior use must be machined.

(e) It is not correct to state, as in the contested decision (page 6, paragraph 4, lines 16 to 18), that "under a deposited metallic layer is understood in the art to be a thin walled product exhibiting a specific crystallographic texture". Moreover, since

the claim does not refer to any thicknesses, it is equally inadmissible to base a decision on the patentability of the subject-matter of Claim 1, as in the contested decision (page 7, first paragraph), on the following reason: "Therefore, this prior use, because of the dimensions of the printing sleeve, teaches away from the subject-matter protected which, in contrast to the cited prior art, represents a relatively very thin throwaway printing sleeve enabling the use of air for expanding the sleeve".

(f) It is known from US-A-3 146 709 to form a thin inner metal layer non-electrolytically. Since it is also known from the prior use to provide a relatively thin etchable outer metal layer electrolytically on an inner conical metal layer, it would be obvious to the person skilled in the art to combine these teachings to arrive at the subject-matter of Claims 1 to 4 and 6 of the contested patent.

(g) The refusal of the Chairman of the Opposition Division to allow the Opponent to present any argumentation on the inventive step of the subject-matter of Claim 1 in the light of the prior use and the general prior art, as reflected by a number of citations, was clearly not in accordance with Article 113(1) EPC, such refusal being based on the assertion of the Chairman that this constituted a ground for opposition not submitted in due time. The case should be remitted to the Opposition Division. If this is refused, the Enlarged Board should be asked to consider whether such remittal should be automatic under these circumstances.

V. The respondent (Patentee) argued substantially as follows:

(a) He relies on the arguments for patentability as expounded by the Opposition Division in the contested decision.

(b) The expression "and has a non-electrolytically deposited inner metal layer" clearly means "any inner metal layer deposited (on a mandrel) by any non-electrolytical method". Such methods, e.g. spraying on as a molten metal or wound on as a helical strip or wrapped around as a sheet with a longitudinal seam are clearly described in the patent.

(c) It is not easy to see why the thickness of the sleeve should depend on the printing pressure employed, when the sleeves are anyway mounted on rigid rollers.

(d) Clearly the internal machining to achieve a taper and an accurate fit on the roller according to the prior use is not to be compared with external machining of the sleeve on a supporting mandrel, as in both the prior use and the present invention.

(e) In summary therefore, the Respondent concludes in respect of the prior use:

"The Opposition Division concluded that the feature in Claim 1 that the inner metal layer is non-electrolytically "deposited" was sufficient to characterise the invention and the various novel and useful features which arise out of it. The Opposition Division (and the Examining Division before it) therefore did not feel it necessary to call for a limitation as to the wall thickness or internal taper of the sleeve, nor to the use of compressed gas in mounting and dismounting the sleeve. The character-

ising feature of the invention enables sufficiently thin sleeves to be produced; it enables them to be produced sufficiently cheaply that they can be used for relatively short printing runs and thrown away; it enables compressed gas to be used for mounting and dismounting the sleeve; it enables the sleeve to be easily manipulated by hand. None of these advantages is enabled, or even suggested, by the cited prior use device, and required a totally new approach to metal printing sleeves in order to bring those advantages about."

(f) In respect of the disclosure of US-A-3 146 709, the Respondent is of the opinion that it cannot reasonably and sensibly be argued that the ordinary skilled reader considering this disclosure would see in it the construction of an all-metal printing sleeve for mounting and dismounting on a mandrel by the use of compressed air. Therefore, even assuming a prior knowledge of the cited prior use "the reader would still have to make the connection between the flexographic printing art with which US-A-3 146 709 is concerned and the gravure art with which the cited prior use device and the present invention are concerned. He would have to see that the embodiment of US-A-3 146 709 which is described as being made of polyester, paper and rubber, held together by pressure-sensitive adhesive, would translate into an all-metal sleeve suitable for gravure printing. He would have to perceive that the metal sleeve could be made sufficiently thin that it would respond to the application of compressed air, and would not require unduly high pressures or produce a sleeve which was too heavy to be readily manipulated in the manner suggested by the US reference. He would have to conceive of the application of the sleeve to gravure

printing, and hence the need to have an all metal inner sleeve in order to enable the outer surface to be electroplated. He would have to perceive that the use of very high pressure oil and the special handling equipment employed in the prior use device were not necessary for metal gravure printing sleeves. And so on."

(g) The Respondent does not understand the objection raised by the Appellant in respect of Article 113(1) EPC. His understanding was that the Opposition Division while remarking that the document which the Appellant wished to introduce into the oral proceedings, had not been submitted in due time under Article 114(2) EPC, considered the document to be not sufficiently relevant that they had to consider it of their own motion in accordance with Article 114(1) EPC.

VI. A communication dated 7 November 1989 and issued in preparation for the appointed oral proceedings set out the provisional opinion of the Board, namely that the wording of Claim 1, "a non-electrolytically deposited inner metal layer" was considered to include only metal layers which have been deposited by a non-electrolytical method, so that since the only method disclosed in connection with the prior use shown in the drawings "Formzylinderkörper" and "Formzylindermantel" is casting the inner layer, this prior use was not novelty destroying of the subject-matter of Claims 1 or 4.

Moreover, the Board was not of the opinion that the person skilled in the art would receive any suggestion from the revealed prior art to replace the prior use casting of the inner metal layer by non-electrolytical deposition. In particular, it appeared to the Board that it was only with

hindsight that the man skilled in the art could be considered to be taught by the citation US-A-3 146 709 to produce a sleeve having a non-electrolytically deposited inner metal layer.

VII. A letter received on 13 January 1989 informed the Board that a new agent had been appointed to represent the Appellant (Opponent) and that interpreters were requested for the oral proceedings. The Appellant was informed by telephone on 18 January 1990 that the request was not in due time.

Basically the arguments advanced in the grounds of appeal were maintained in the letter, but additionally it was argued that the phrase "non-electrolytically deposited inner metal layer" was not clear and moreover constituted added subject-matter not disclosed in the original application, thus infringing against Article 123(2) EPC.

VIII. At the oral proceedings held on 7 February 1990 the parties presented the following arguments:

(A) Appellant

(i) Insofar as the Chairman of the Opposition Division had not allowed the Appellant to argue on inventive step in the oral proceedings, particularly with respect to US-A-4 024 045, Article 113(1) EPC had clearly not been complied with.

(ii) The phrase "a non-electrolytically deposited inner metal layer" is both unclear, (the word 'deposited' being clearly inappropriate) and moreover constitutes added subject-matter, there being no basis for the word "non-

electrolytically" in the original application, and the term "deposited" being too general in the light of the methods specifically disclosed, namely spraying and wrapping.

(iii) Claim 1 lacks novelty in the light of the disclosure of EP-A-0 000 410 falling in the Article 54(3) EPC field, particularly having regard to the reference to the formation of the inner layer by turning or deep-drawing on page 7, lines 30-35.

(iv) The subject-matter of Claim 1 is lacking in inventive step with respect to the prior use from which it differs purely in respect of the manner in which the inner layer is formed. Moreover, it has not been made clear what the problem to be solved was with respect to this prior use, which must be considered as the nearest prior art.

(B) Respondent

(i) To avoid the objection to the term "deposited", it was proposed to replace the phrase "a non-electrolytically deposited inner metal layer (41,43,48)" on lines 22 to 24 of Claim 1, with "an inner metal layer (41,43,48) which has been formed by non-electrolytic application on a mandrel, and".

(ii) The introduction of the word non-electrolytically is justified as a disclaimer of the electrolytic application of the inner metal layer to a mandrel disclosed in the Article 54(3) EPC document EP-A-0 000 410.

(iii) The disclosure in EP-A-0 000 410 of the methods of turning or deep-drawing is not considered to be sufficiently specific to form a disclosure of an inner metal layer which has been formed by non-electrolytic application on a mandrel, as called for in Claim 1. Moreover, it is not clear that these methods are disclosed in respect of the inner layer rather than of the mandrel itself.

(iv) The nearest prior art should be considered to be the printing sleeves of BE-A-856 427 as is made clear in the contested patent. The problem to be solved with respect to this prior art then remains also as set out in the patent.

The prior use referred to by the Appellant, while disclosing the features of the pre-characterising part of Claim 1, and also being of all metal construction, clearly relates to a completely different type of sleeve as seen in the context of the total disclosure of the contested patent.

IX. The Appellant requests that the decision under appeal be set aside and the patent be revoked as far as Claims 1 to 4 and Claim 6 are concerned; that the appeal fee be refunded, and subsidiarily that the case be sent back to the first instance for further prosecution. The Respondent requests that the appeal be dismissed and the patent be maintained as granted with the following change in Claim 1: the replacement on lines 22 to 24 of "a non-electrolytically deposited inner metal layer (41,43,48)" by "an inner metal layer (41,43,48) which has been formed by non-electrolytic application on a mandrel, and".

Subsidiarily he requests maintenance of the patent on the basis of the claims submitted by letter dated 30 October 1987 with the above-mentioned replacement.

**Reasons for the Decision**

1. The appeal is admissible.

2. Concerning the main request there are no objections under Articles 123(2) and (3) EPC to the amended Claim 1. A basis for "an inner metal layer which has been formed by application on a mandrel" is to be found for example in the original Claim 4 as filed, in which reference is made to "applying a first layer of metal over the outside surface of the mandrel". The restriction to "non-electrolytic application" is to be interpreted as a disclaimer intended to exclude from protection the disclosure of EP-A-0 000 410 (referred to in the opening of the contested patent), in which all metal layers are electrolytically deposited. This is clearly permissible in accordance with established Board of Appeal case law in cases where what is claimed in general overlaps with the state of the art, even if the original documents give no basis for such an exclusion (cf. T 4/80, OJ EPO 4/82, 149; also for example T 433/86 of 11 December 1987 unpublished). Similar considerations apply to the use of this word in Claim 4.

With respect to Article 123(3), the phrase "an inner metal layer which has been formed by application on a mandrel" as now used in Claim 1 is clearer and narrower than "a deposited inner metal layer" and therefore does not amend the claim in such a way as to extend the protection conferred.

3. **Novelty**

3.1 The subject-matter of both Claims 1 and 4 according to the main request differs from the disclosure of EP-A-0 000 410 (lying in the Article 54(3) field and therefore only of relevance for novelty and not inventive step) in respect of the method of forming the inner layer, as set out in paragraph 2 above.

The Appellant argued that the disclosure of turning and in particular of deep-drawing on page 7 of this citation anticipates the formation of the inner layer by non-electrolytic application to a mandrel. However, a closer reading of the relevant passage reveals that the turning and deep-drawing are suggested for forming a taper-ground steel matrix which, as is clear from lines 4, 9 and 12, is intended to form the mandrel rather than the inner layer.

3.2 In respect of the prior use, the drawings submitted by the Appellant reveal a printing roll "Formzylinderkörper", one end of which is of slightly larger diameter (315 mm) than the other end (303.65 mm), the sleeve being similarly dimensioned so that it can be mounted on the roll by sliding it on lengthwise until it covers fluid outlet openings in the roll intermediate the ends of the roll (and constituted by the helical groove (A) provided in the outer surface of said printing roll), applying fluid under pressure to the outlets to slightly expand said sleeve, and then sliding the sleeve the rest of the way onto said printing roll. The sleeve is made entirely of metal (here steel and copper according to the indications made on drawing sheet "Formzylindermantel"), and has an inner metal layer (steel) which contacts the roll and has a cylindrical outermost surface, and an etchable electro-plated outer metal layer (copper).

The Respondent admits that this constitutes prior art.

The subject-matter claimed in Claim 1 of the contested patent differs from this prior use however, in that the inner metal layer of said printing sleeve has been formed by non-electrolytic application on a mandrel.

It is pointed out in this respect that the only indication of how the prior use inner metal layer is formed is given by the Appellant himself who, according to his Statement of Grounds (received 19 June 1987, page 4, first complete paragraph), explained that the inner layer can be formed by casting. This is also stated to be confirmed by the reference to the material used, "St60-2" on the drawing "Formzylindermantel". In the opinion of the Board, casting of such a tube cannot be considered as being included within the expression "formed by non-electrolytic application on a mandrel" as used in Claim 1.

3.3 According to BE-A-856 427, on which the pre-characterising part of Claim 1 is based, (correctly in the opinion of the Board) the printing sleeve is made entirely of plastics, and therefore differs from Claim 1 by all the characterising features thereof.

3.4 According to US-A-4 024 045, (discussed in the opening paragraphs of the contested patent) a matrix usable for producing perforated nickel sleeves comprises a simple metal sleeve produced by electrolytic deposition on a roller body, the sleeve being subsequently removed from the body. The roller can be tapered to facilitate removal, or the roller (stated in the present patent to be the "sleeve", but see column 2, lines 47 to 53 of the citation) can be expandable by internal over pressure, and may have a chromium release coating.

3.5 The Appellant has also referred to US-A-3 146 709 (cited during the Examination proceedings). In the opening paragraph of the specification it is stated that the invention relates to the art of printing in which rubber printing plates are mounted on mandrels. A supporting sleeve for the rubber printing plates is made of a suitable material, for example, plastics material such as polyester resin, or metal, (column 1, lines 16 to 21). Gas under pressure is applied to the mandrel so that it emerges from apertures spaced circumferentially and longitudinally on the mandrel, with the object of providing a lubricating film of air between the sleeve and the mandrel. The mandrel, and therefore the internal surface of the sleeve, are cylindrical and hence of uniform diameter, so that the sleeve can only be fitted over the extreme end of the mandrel initially, and air nozzles have to be provided at that extreme end in order to provide the lubricating film enabling the sleeve to be slid onto the mandrel. This is quite different from the situation where the mandrel is tapered and the sleeve can be slid a substantial distance on to the mandrel even without the application of any gas under pressure.

Moreover, the method of construction of the sleeve forming the specific embodiment indicated in the paragraph bridging columns 1 and 2 of the cited specification includes forming a tubular sleeve from helically wound polyester strip, with the abutting edges sealed by a strip of paper, and then covered by a wider strip of adhesive paper helically wound, and presenting an external adhesive surface to which the rubber printing plates can be secured. This is clearly different from the subject-matter of Claim 1.

3.6 No other document revealed in the procedure so far is more relevant than these above-cited documents. The subject-matter of Claim 1 is therefore novel over the prior art.

4. The question now to be considered is the possible presence of an inventive step in the subject-matter of main request Claim 1. The following points emerge:

4.1 As set out in paragraph 3.3 above the invention sets out from the plastics printing sleeve disclosed in BE-A-856 427. The problem to be solved by the invention was, according to the patent (column 1, lines 43-50), to provide a sleeve of this type but made in a novel manner (entirely of metal) so as to provide a conductive path from the inside to the outside of the sleeve to assist in electro-plating the outer surface of the sleeve.

This problem is solved by the characterising features of Claim 1, namely by providing a sleeve made entirely of metal having an inner metal layer which has been formed by non-electrolytic application on a mandrel, and an etchable electro-plated outer metal layer.

An examination of the revealed prior art must therefore be made to see whether there is any indication for the person skilled in the art to solve the problem in this way.

4.2 The sleeve according to BE-A-856 427 is made entirely of plastics and no indication is seen here to use an entirely metal sleeve.

4.3 Similarly, the sleeve according to US-A-4 024 045 is a simple metal sleeve produced by electrolytic deposition on a roller body from which it is subsequently removed. The optional chromium separating layer may be placed between the sleeve and roller on the roller by galvanic deposition

(column 2, lines 42 to 46). Again, there is no suggestion to form an inner metal layer by non-electrolytic application on a mandrel.

4.4 The Appellant has suggested that the cited document US-A-3 146 709 teaches the production of a sleeve having a spirally wound inner metal layer, welded together at its edges. The Board cannot agree with this. In the Board's opinion this interpretation is clearly based on an ex post facto analysis of this document. In reality, what is disclosed is the statement that the sleeve may be made of metal or plastics. The particular embodiment is then described as being made of helically wound polyester strip, held together by adhesive paper to which rubber printing plates can be secured. It is in the opinion of the Board, only with hindsight that this can be considered to suggest to the man skilled in the art to form the inner metal layer of the sleeve by non-electrolytic application on a mandrel. It would be incorrect to interpret this document as suggesting the use of a metal layer formed by non-electrolytic application on a mandrel since such a layer is not disclosed at all in this art. The mere mention of a "metal layer" must therefore be interpreted as meaning one of the known types of metal layer in the art, e.g. electrolytically deposited.

4.5 The man skilled in the art also receives no indication from the other revealed documents.

4.6 The subject-matter of Claim 1 therefore involves an inventive step.

5. Since therefore the main request Claim 1 can be maintained, it is not necessary to consider the auxiliary request.

6. The Appellant maintained at the oral proceedings held on 7 February 1990 that the nearest prior art was that disclosed in the acknowledged prior use and that, since the Respondent has not made clear what problem was to be solved with respect to this prior art, a proper discussion of a possible inventive step was not possible. This argument is based on the fact that the subject-matter of Claim 1 differs from the prior use with respect to one characterising feature only, namely that the inner metal layer has been formed by non-electrolytic application on a mandrel, rather than the casting of the prior use.

The Board does not agree that this should be considered as the nearest prior art and is not convinced that the sole consideration in determining the nearest prior art is a matter of counting common features between the claim and such art without taking the whole disclosure of the patent into account, but in the present case the presence of an inventive step can still be seen even if the prior use is considered as nearest prior art.

As stated in paragraph 3.2 above, the subject-matter of Claim 1 differs from the acknowledged prior use in that the inner metal layer of the printing sleeve is formed by non-electrolytic application on a mandrel. The problem to be solved would therefore appear to be, at its most general, to provide an alternative all metal sleeve.

The question to be answered is therefore whether there is any indication for the person skilled in the art to replace the known prior use casting with non-electrolytic deposition.

The Appellant has argued that it cannot be seen to be inventive merely to replace the known casting method by another method. This however overlooks the fact, as

pointed out in paragraph 4.4 above, that no evidence has been filed that the formation of an inner metal layer by non-electrolytic application on a mandrel was known in this art. The Board is therefore of the opinion that the replacement of the known casting method of forming the inner layer by a novel method of non-electrolytical application on a mandrel would not have been obvious to the person skilled in the art.

7. The same considerations apply to the method Claim 4.

8. Claims 2 and 3, and Claim 6 (the other opposed claims) which are dependent respectively on Claims 1 and 4, relate to specific embodiments of the sleeve and the method of making thereof as claimed in these respective claims and are therefore also allowable.

9. With respect to the alleged infringement of Article 113(1) EPC during the oral proceedings held before the Opposition Division, the Appeal Board has been unable to establish a clear picture of exactly what happened on the basis of the evidence available to them.

It appears highly probable that the microphone of the Appellant was indeed cut-off by the Chairman when attempting to introduce arguments on inventive step based particularly on the prior use and the disclosure of US-A-4 024 045. However, the microphone can of course be switched off automatically when another participant, e.g. the Chairman, presses the activating button to use his microphone. This could in fact have happened in this case when the Chairman wished to indicate that the Opposition Division did not intend to allow the introduction of this late-filed document into the proceedings. This scenario would be entirely consistent with the recollection of the Respondent and with the statement in the contested

decision refusing admission of the document, no reasons needing to be given. A document is not to be considered to be filed in time in opposition proceedings merely because it is referred to in the patent (see T 198/88 of 3 August 1989, to be published, and T 184/86 of 8 November 1989, not published). It is also noted that no attempt has been made to introduce the document into the Appeal procedure.

On balance, therefore, even if it might be considered that the Chairman's behaviour was rather formalistic, it cannot be seen to have constituted a substantial procedural error. There is therefore no justification for refunding the appeal fee, nor for remitting the case to the Opposition Division.

**Order**

**For these reasons, it is decided that:**

The appeal is dismissed.

The case is remitted to the first instance with the order to maintain the patent on the basis of the claims as granted with the replacement provided for in the main request (see point IX).

The Registrar: The Chairman:

S. Fabiani P.E.M. Delbecque

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