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DECISION
of 24 June 2004

Case Number: T 0257/02 - 3.2.5

Application Number: 96102285.2

Publication Number: 0727326

IPC: B41N 10/04

Language of the proceedings: EN

Title of invention:
Printing blanket

Patentee:
Sumitomo Rubber Industries Ltd.

Opponent:
Heidelberger Druckmaschinen AG

Headword:
-

Relevant legal provisions:
EPC Art. 54, 56, 84, 123(2)

Keyword:
"Main request and first auxiliary request: novelty (yes),
inventive step (no)"
"Second auxiliary request: clarity (no)"
"Third auxiliary request: added subject-matter (no), inventive
step (yes)"

Decisions cited:
-

Catchword:
-



Case Number: T 0257/02 - 3.2.5

D E C I S I O N
of the Technical Board of Appeal 3.2.5
of 24 June 2004

Appellant: Sumitomo Rubber Industries Ltd.
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Representative: Müller-Boré & Partner
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Respondent: Heidelberger Druckmaschinen AG
(Opponent) Kurfürsten-Anlage 52-60
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Representative: -

Decision under appeal: Decision of the Opposition Division of the
European Patent Office posted 9 January 2002
revoking European patent No. 0727326 pursuant
to Article 102(1) EPC.

Composition of the Board:

Chairman: W. Moser
Members: W. R. Zellhuber
P. E. Michel

Summary of Facts and Submissions

- I. The appellant (patent proprietor) lodged an appeal against the decision of the Opposition Division revoking the European patent No. 0 727 326.
- II. An opposition was filed against the patent as a whole and based on Article 100(a) EPC (lack of novelty, Article 54 EPC, and lack of inventive step, Article 56 EPC). The Opposition Division held that the ground of lack of inventive step (Article 56 EPC) prejudiced the maintenance of the patent having regard to the cited documents.
- III. Oral proceedings were held before the Board of Appeal on 24 June 2004.
- IV. The appellant requested that the decision under appeal be set aside and that the patent be maintained on the basis of the following documents filed on 24 May 2004:
 - (i) main request: claims 1 to 3 filed as main request; or
 - (ii) first auxiliary request: claims 1 and 2 filed as first auxiliary request; or
 - (iii) second auxiliary request: claims 1 and 2 filed as second auxiliary request; or
 - (iv) third auxiliary request: claims 1 and 2 filed as third auxiliary request.

The respondent (opponent) requested that the appeal be dismissed.

V. Claim 1 according to the main request reads as follows:

"1. A printing blanket comprising:

- (a) a seamless base layer having a thickness of 0.2 to 10 mm and comprising an elastomer;
- (b) a porous seamless compressible layer having a thickness of 0.15 to 0.6 mm and comprising an elastomer;
- (c) a non-stretchable layer comprising a non-stretchable thread which is wound on the compressible layer in helical fashion along the circumferential direction; and
- (d) a seamless surface printing layer having a thickness of 0.1 to 0.4 mm and comprising an elastomer;

all of which are laminated in this order on an outer peripheral surface of a cylindrical sleeve mounted on a blanket cylinder."

Claim 1 of the first auxiliary request differs from claim 1 of the main request in that the seamless base layer (feature (a)) has a thickness of 0.4 to 5.0 mm, the porous seamless compressible layer (feature (b)) a thickness of 0.2 to 0.5 mm, and the seamless surface printing layer (feature (d)) a thickness of 0.15 to 0.3 mm.

Claim 1 of the second auxiliary request differs from claim 1 of the first auxiliary request by adding the feature "the compressible layer having a lower strength than the base layer, a non-stretchable layer and a seamless surface printing layer" after the term "(b) a porous seamless compressible layer having a thickness of 0.2 to 0.5 mm and comprising an elastomer".

Claim 1 of the third auxiliary request reads as follows:

"1. A printing blanket comprising:

- (a) a non-porous seamless base layer having a thickness of 0.4 to 5.0 mm and comprising an elastomer;
- (b) a porous seamless compressible layer having a thickness of 0.2 to 0.5 mm and comprising an elastomer;
- (c) the non-stretchable layer comprising a non-stretchable thread which is wound on the compressible layer in helical fashion along the circumferential direction; and
- (d) the seamless surface printing layer having a thickness of 0.15 to 0.3 mm and comprising an elastomer;

all of which are laminated in this order on an outer peripheral surface of a cylindrical sleeve mounted on a blanket cylinder."

VI. In the course of the appeal procedure, the following documents have, *inter alia*, been referred to:

D1: EP-A 0 421 145

D2: EP-A 0 452 184

D4: US-A 5,323,702

D5: US-A 3,700,541

D7: US-A 4,812,357

L1: International Standard ISO 12636, first edition 1998-07-15, Graphic technology - Blankets for offset printing, pages i to iv and 1 to 8.

VII. In the written procedure and during oral proceedings, the appellant argued essentially as follows:

Main request

The subject-matter of claim 1 was novel, since neither document D4 nor any other document disclosed a printing blanket comprising layers having thicknesses as claimed in claim 1. Document D4 did not in particular disclose the numerical ranges of the base layer or the compressible layer claimed in claim 1. Since, according to column 9, lines 20 to 24 of document D4, an additional layer of rubber cement was applied over the wound thread, the indication of the thickness of the threads embedded in the compressible layer of the printing blanket of document D4 did not allow any conclusion about the total thickness of the layer.

The subject-matter of claim 1 also involved an inventive step.

Starting from document D4 as closest prior art, the problem to be solved was to provide a printing blanket which realized high quality printing over a wide range from normal printing to high-speed printing and which had a longer lifetime and higher strength to facilitate handling. A further object was to improve the reusability of the printing blanket.

That problem was solved by a printing blanket having the claimed four-layer structure and wherein the base layer, the compressible layer and the surface printing layer had thicknesses specified to remain in predetermined numerical ranges.

Document D4 suggested a different solution. It taught that the layer structure or the material composition of the individual layers, in particular that of the compressible layers, were the subjects which were to be considered when solving the technical problem. The thickness of the individual layers was not recognized as being significant and in any relationship to the printing quality, the lifetime or the stability of the printing blanket. A person skilled in the art, starting from document D4 and trying to improve the quality and the stability of the high-speed printing, even if he or she could change the thicknesses of the base and the compressible layer, would not do so in order to solve the objective technical problem posed.

First auxiliary request

The thickness ranges claimed in claim 1 were disclosed in the application as filed in general terms for each of the various layers of the printing blanket according to claim 1. Claim 1 thus met the requirements of Article 123(2) EPC.

Compared with claim 1 of the main request, the thicknesses of the base layer, compressible layer and surface printing layer were specified in claim 1 of the first auxiliary request in even narrower ranges of values.

Moreover, the printing blanket according to claim 1 further differed from the printing blanket disclosed in document D4 in that the maximum thickness of the surface printing layer was 0.3 mm, whilst, according to document D4, column 9, line 67, to column 10, line 3, the minimum thickness of that layer was 0.33 mm.

A person skilled in the would not consider thickness values residing outside the ranges indicated in the prior art. The subject-matter of claim 1 of the first auxiliary request was thus novel and involved an inventive step.

Second auxiliary request

The term "strength" was a clear and commonly used parameter to characterize printing blankets, and it was clear for a person skilled in the art that the term "strength" in claim 1 had to be construed as meaning "tensile strength". The tests for strength were subject

to standardization, and document L1 referred in points 2.13, 3.4 and 4.3 to the definition and test methods for the tensile strength of a printing blanket.

Claim 1 according to the second auxiliary request thus met the requirements of Article 84 EPC.

Third auxiliary request

The application as filed disclosed a printing blanket wherein the base layer and the compressible layer differed only in that voids are provided in the compressible layer by an additional process step. There was thus a disclosure of a printing blanket comprising a non-porous base layer and a porous compressible layer.

The subject-matter of claim 1 additionally differed from the printing blanket according to document D4 in that the base layer was a non-porous layer.

The structure of the printing blanket according to document D1 was different from that of document D4. Document D1 did not suggest providing a non-stretchable layer comprising a non-stretchable thread which was wound on the compressible layer in helical fashion along the circumferential direction. Document D1 was completely silent about the thicknesses of the various layers. There was no motivation for combining the teachings of documents D1 and D4, and no hint that such a combination would result in a printing blanket having in combination all the features of claim 1 of the third auxiliary request.

The subject-matter of claim 1 of the third auxiliary request thus involved an inventive step.

VIII. In the written procedure and during oral proceedings, the respondent argued essentially as follows:

Main request

Document D4 disclosed a printing blanket having a layer structure as claimed in claim 1. The range of thicknesses of the base layer claimed in claim 1 according to the main request included any reasonable thicknesses of such a layer. From Figure 3 and the description, column 5, line 65, to column 6, line 37, of document D4, it was derivable that the thickness of the compressible layer was in the order of magnitude of the thickness of the threads embedded in that layer. The thickness of the threads was between 0.13 mm and 0.77 mm, preferably 0.38 mm. A thickness of the compressible layer between 0.15 mm and 0.6 mm as claimed in claim 1 was thus implicitly disclosed in document D4.

The subject-matter of claim 1 of the main request was thus not novel.

If document D4 did not implicitly disclose the thickness ranges indicated in claim 1 as regards the base and the compressible layer, the subject-matter of claim 1, nevertheless, did not involve an inventive step.

The printing blanket of document D4 differed from the printing blanket according to claim 1 only in that the

thickness ranges of the base layer and the compressible layer were indicated. Having the object of optimizing the printing blanket of document D4 with respect to high-speed properties and lifetime, a person skilled in the art would provide a printing blanket with layers having appropriate thicknesses.

Document D4 made mention that the thickness of the compressible layer was a criterion to be considered and disclosed methods for providing a printing blanket with a compressible layer having an appropriate thickness (cf. column 10, lines 20 to 24).

It fell within the routine of a person skilled in the art carrying out tests and thus determining the limits of the thicknesses of the layers which allowed high-speed printing at a desired quality. By so doing, he or she would arrive at thickness values falling within the ranges claimed in claim 1 of the main request of the appellant.

First auxiliary request

The thickness ranges as claimed in claim 1 were not disclosed in combination in the application as filed, and thus the requirements of Article 123(2) were not met.

Furthermore, the thickness values indicated in claim 1 did not go beyond those inevitably arrived at in routine tests for determining thicknesses which allowed good quality at high printing speeds. Claim 1 according to the first auxiliary request therefore did not involve an inventive step.

Second auxiliary request

The meaning of the term "strength" used in claim 1 was not clear. Document L1 made mention of the tensile strength as a defining feature of a printing blanket. However, according to the patent in suit, page 3, lines 14 and 40, the term "strength" had to be construed as meaning "robustness" or "hardness". The subject-matter of claim 1 of the patent in suit was thus not clear.

Third auxiliary request

The term "non-porous" used in claim 1 was not disclosed as such in the application as filed. A porous compressible layer and, in contrast thereto, a non-porous base layer was derivable only from the embodiment wherein both layers were of the same material. Claim 1, however, did not include that feature. Therefore, the requirements of Article 123(2) EPC were not met.

With regard to claim 1 of the third auxiliary request, document D1 represented the closest prior art. It disclosed a printing blanket comprising a non-porous base layer. Only the thicknesses of the various layers were not disclosed. However, in order solve the problem of providing a printing blanket which allowed high-speed printing at a desired quality, the claimed thicknesses were available for a person skilled in the art from document D4 and routine tests, respectively.

Therefore, the subject-matter of claim 1 of the third auxiliary request did not involve an inventive step.

Reasons for the Decision

1. *Main request*

1.1 Novelty (Article 54 EPC)

According to claim 1 of the main request, the seamless base layer has a thickness of 0.2 to 10 mm, and the porous seamless compressible layer has a thickness of 0.15 mm to 0.6 mm.

None of the cited documents discloses a seamless printing blanket having a structure and layer thicknesses as claimed in claim 1.

In particular, document D4 is silent about the thickness of the two compressible layers 62 and 64 of the printing blanket disclosed therein. Only the diameter of the compressible threads embedded in the above mentioned layers is disclosed. However, since, according to column 9, lines 20 to 29 of document D4, an additional quantity of rubber cement is applied over the threads, it is not directly and unambiguously derivable that the final thicknesses of these layers inevitably fall within the ranges indicated in claim 1.

The subject-matter of claim 1 of the main request is thus novel within the meaning of Article 54 EPC.

1.2 Inventive step (Article 56 EPC)

1.2.1 Document D4, which is considered to represent the closest prior art, discloses a printing blanket comprising

- a first and a second compressible layer (62, 64) each comprising an elastomer and including voids (cf. column 5, line 46, to column 6, line 2, and column 9, lines 30 to 36),
- a non-stretchable layer (66) comprising a non-stretchable thread which is wound on the compressible layer in helical fashion along the circumferential direction (cf. column 6, lines 45 to 56, and column 9, lines 37 to 46), and
- a seamless surface printing layer 68 having a thickness of about 0.013 to 0.020 inches, i.e. of about 0.33 to 0.51 mm, and comprising an elastomer (cf. column 7, lines 15 to 22 and column 9, line 67 to column 10, line 3),
- wherein these layers are laminated in this order on an outer peripheral surface of a cylindrical sleeve 70 mounted on a blanket cylinder (cf. column 5, lines 17 to 29, abstract and Figure 3).

The subject-matter of claim 1 of the main request goes beyond the disclosure of document D4 in that the thickness of the base layer, which, in the printing blanket of document D4, is denoted as the first compressible layer, and the thickness of the porous

compressible layer (second compressible layer) are specifically defined.

- 1.2.2 According to the patent in suit, page 3, lines 13 and 14, a main object is "to provide a seamless printing blanket which realizes high quality printing over a wide range from normal printing to high-speed printing".

Document D4 discloses a tubular printing blanket which enables a printing press to run at high speeds without excessive vibration or shock loads, which detrimentally affect print quality, without slipping of printing surfaces which could smear the ink, and without overheating, cf. column 1, lines 47 to 51 and 64 to 68, and column 2, lines 53 to 57.

A person skilled in the art would thus consider using a printing blanket as disclosed in document D4 for solving the above-mentioned main object. In the course of manufacturing the printing blanket, he or she inevitably has to consider selecting appropriate thicknesses for the different layers insofar as they are not already explicitly cited in the document. His attention is further drawn to suitable methods for achieving a desired layer thickness (cf. document D4, column 9, lines 20 to 24 and column 10, lines 20 to 28).

- 1.2.3 Consequently, as regards the issue of inventive step, the question to be answered is whether or not, in a printing blanket as disclosed in document D4, a person skilled in the art would consider thickness values of the first and second compressible layers, which are

within the ranges indicated in claim 1 of the main request.

According to a preferred method of manufacturing a printing blanket according to document D4, cf. column 3, lines 38 to 42, column 9, lines 3 to 29, and Figure 6, the first and second compressible layers are formed by winding a compressible thread, previously encapsulated in a rubber cement, in a helix around the backing layer. These threads have a diameter of from 0.13 to 0.76 mm, preferably 0.38 mm (cf. column 6, lines 34 to 37). Consequently, the thickness of each of the compressible layers must be greater than 0.13 mm.

In the Board's view, a person skilled in the art would, at least as a starting point, take into consideration providing compressible layers having thicknesses which are in the range of the diameter of the embedded threads and above. That range (0.13 to 0.76 mm, preferably 0.38 mm) overlaps with the ranges of 0.2 to 10 mm and 0.15 to 0.6 mm specified in claim 1 of the main request with regard to the base layer and the porous compressible layer, respectively.

Furthermore, it is part of the activities deemed normal for the skilled person to determine and to optimise a physical dimension, here: the final thicknesses of the first and the second compressible layer, by carrying out test runs, thereby varying the final thickness of these layers. Test runs with final thicknesses in the order of magnitude of the diameter of the embedded threads (0.13 to 0.76 mm) would thus show that selecting a thickness for each of the compressible

layers in that range gives rise to a printing blanket having the desired properties.

Moreover, document D2 suggests a seamless printing blanket comprising a compressible layer having a thickness of between 0.1 and 8 mm, cf. abstract and column 2, lines 50 to 52. Document D5 describes a printing blanket with a porous compressible layer having a thickness of 0.625 mm, cf. column 4, lines 52 and 53, and document D7 suggests a thickness of between 0.127 and 0.76 mm for the porous compressible layer in a printing blanket, cf. column 3, line 68.

Admittedly, documents D5 and D7 concern non-tubular printing blankets comprising only one compressible layer. Nevertheless, documents D5 and D7 as well as document D2 show that the range of thicknesses of the compressible layer indicated in claim 1 of the main request coincides with those of generally known printing blankets.

- 1.2.4 Accordingly, in a printing blanket having a structure and layer thicknesses as described in document D4 and which allows high-speed printing, a person skilled in the art would consider selecting a thickness for the first and the second compressible layer in the claimed range, and would thus arrive in an obvious manner at a printing blanket which falls within the scope of claim 1 of the main request.

Consequently, it need not be examined whether or not further objects (lifetime, reusability) may also be achieved by providing a printing blanket having a

structure and layer thicknesses as claimed in claim 1 of the main request.

Therefore, the subject-matter of claim 1 of the main request does not involve an inventive step within the meaning of Article 56 EPC.

2. *First auxiliary request*

2.1 Added subject-matter (Article 123(2) EPC)

The subject-matter of claim 1 is disclosed in claim 1 of the application as filed (published version), in connection with the indication of the thickness ranges of the base layer, the porous compressible layer and the surface printing layer on page 4, lines 13 to 14, page 5, line 10, and page 6, line 14 of the application as filed (published version), respectively. The thicknesses are disclosed in the application as filed independently from each other and as preferred ranges.

Claim 1 thus meets the requirements of Article 123(2) EPC.

2.2 Inventive step (Article 56 EPC)

However, although the thickness ranges of the base layer, the compressible layer and the surface printing layer are more limited than those specified in claim 1 of the main request, they do not fall outside the ranges a person skilled in the art would take into consideration. The above considerations with respect to the selection of appropriate thicknesses of the base

layer and the compressible layer also apply to claim 1 of the first auxiliary request.

As regards the upper limit of 0.3 mm of the thickness of the surface printing layer, there is no substantial difference to the thickness value of **about** 0.013 inches, i.e. **about** 0.33 mm disclosed in document D4 as a suitable thickness for that layer, cf. column 10, line 1 of document D4. Accordingly, that limitation cannot substantiate any inventive step.

Therefore, the subject-matter of claim 1 according to the first auxiliary request also does not involve an inventive step.

3. *Second auxiliary request (Clarity, Article 84 EPC)*

The feature "... the compressible layer having a lower strength than the base layer, a non-stretchable layer and a seamless surface printing layer..." of claim 1 is not clear, because the term "strength" is vague and defined neither in the claim nor in the description of the patent in suit.

The appellant stated that, for a person skilled in the art, it would be clear that the term "strength" had to be construed as meaning "tensile strength", thereby referring to document L1. According to the passage on page 2, point 2.13, of document L1, the tensile strength of a printing blanket is defined as "force per unit width required for breaking a blanket under longitudinal stress in the around-the-cylinder direction".

In the patent in suit, the term "tensile strength" is used to indicate the non-stretching property of the wire rods forming the non-stretchable layer, cf. page 5, lines 47 to 49, and the strength in winding the wire rod, cf. page 6, lines 3 and 4. In connection with the compressible layer, however, the term "strength" as such is used (cf. page 3, line 40), and, in the directly following passage (cf. page 3, lines 40 to 43), the frangibility of the compressible layer with respect to the base layer is described. According to that passage, the interpretation of the term "strength" in the sense of robustness and hardness appears more probable. Moreover, on page 2, line 58, the patent in suit makes mention of "the strength of the printing blanket in the thickness direction", which is not in line with the above-mentioned definition of the tensile strength of a printing blanket in document L1.

Since the meaning of the term "strength" is neither defined in claim 1 nor clearly derivable from the description of the patent in suit, the feature "the compressible layer having a lower strength than the base layer, a non-stretchable layer and a seamless surface printing layer" is not clear.

Claim 1 of the second auxiliary request thus does not meet the requirements of Article 84 EPC.

4. *Third auxiliary request*

4.1 Correction

It is clear that, in features (c) and (d) of claim 1, the terms "the non-stretchable layer" and "the seamless

surface printing layer" should correctly read "a non-stretchable layer" and "a seamless surface printing layer".

4.2 Amendments (Article 123(2),(3) EPC)

Claim 1 of the third auxiliary request comprises, in addition to the subject-matter of claim 1 according to the first auxiliary request, the feature that the base layer is a non-porous base layer. Although that feature is not explicitly disclosed in the application as filed, it is nevertheless directly and unambiguously derivable from the description of the base layer and the compressible layer on page 4, lines 7 to 12, and page 4, line 56 to page 5, line 4, and Figure 2 of the application as filed (published version), wherein, in contrast to the base layer, the compressible layer is described and shown as being a porous layer. The embodiment wherein both layers are of the same material is disclosed in the application as filed (published version) on page 5, lines 8 and 9, as an example.

Therefore, claim 1 meets the requirements of Article 123(2) EPC.

Dependent claim 2 corresponds to claim 4 of the application as filed. The description was amended to bring it in line with the subject-matter of claim 1. References to prior art documents were added. The drawings correspond to the drawings of the application as filed. Consequently, claim 2, the amended description and the drawings also meet the requirements of Article 123(2) EPC.

Furthermore, the scope of protection conferred by claim 1 is more limited than that of claim 1 of the patent in suit as granted. The patent in suit as amended thus meets the requirements of Article 123(2) and (3) EPC.

4.3 Inventive step (Article 56 EPC)

Since the printing blanket according to claim 1 of the third auxiliary request comprises a non-porous seamless base layer, in contrast to the printing blanket according to document D4, document D1 represents the closest prior art.

Document D1 discloses a printing blanket comprising a non-porous seamless base layer 74, a porous compressible layer 68, and a surface printing layer 66, cf. column 8, lines 25 to 54, and Figure 3. Additionally, a deformable filament or a non-stretchable material can be provided between the above mentioned layers or in each of these layers, cf. column 12, lines 9 to 14.

The printing blanket according to claim 1 differs from the printing blanket known from document D1 in that, between the compressible layer and the surface printing layer, a non-stretchable layer is provided, which comprises a non-stretchable thread wound on the compressible layer in helical fashion along the circumferential direction. Furthermore, the thickness values of neither the base layer, the compressible layer nor the surface printing layer are specified in document D1.

Document D1 and D4 describe different structures of tubular printing blankets. There is no indication in either of these documents for combining the teachings of these documents in such a way as to provide a printing blanket as claimed in claim 1. That is to say a printing blanket which comprises, on the one hand, a non-porous base layer, and a helically wound non-stretchable thread between the compressible layer and the surface printing layer, on the other. Document D4 suggests such a helically wound thread in combination with a printing blanket comprising a porous base layer. Document D1 only suggests providing a filament or non-stretchable material, thereby offering a number of possibilities as regards the location of the filament or material within the blanket.

Although the particular components are disclosed in document D1 as well as in document D4, there is no indication that the problem of providing a seamless printing blanket which realizes high quality printing over a wide range from normal printing to high-speed printing can be solved by the claimed combination of the components of the printing blanket and by specifying appropriate layer thicknesses.

In the Board's view the subject-matter of claim 1 of the third auxiliary request thus involves an inventive step within the meaning of Article 56 EPC.

The subject-matter of dependant claim 2 similarly involves an inventive step.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The case is remitted to the first instance with the order to maintain the patent on the basis of the following documents:
 - (a) claims 1 and 2 filed as third auxiliary request on 24 May 2004; and
 - (b) description: pages 2, 3, 3a, 3b, 3c, 4 to 16 presented during oral proceedings; and
 - (c) drawings, Figures 1 to 3, as granted.

The Registrar:

The Chairman:

M. Dainese

W. Moser