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D E C I S I O N
of 11 December 2001

Case Number: T 0505/99 - 3.2.7

Application Number: 96110857.8

Publication Number: 0753471

IPC: B65G 15/36

Language of the proceedings: EN

Title of invention:
Steel cable conveyor belt with improved penetration and rip resistance

Applicant:
THE GOODYEAR TIRE & RUBBER COMPANY

Opponent:
-

Headword:
-

Relevant legal provisions:
EPC Art. 56

Keyword:
"Inventive step (yes)"

Decisions cited:
-

Catchword:

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Beschwerdekammern | Boards of Appeal | Chambres de recours

Case Number: T 0505/99 - 3.2.7

D E C I S I O N
of the Technical Board of Appeal 3.2.7
of 11 December 2001

Appellant: THE GOODYEAR TIRE & RUBBER COMPANY
1144 East Market Street
Akron, Ohio 44316-0001 (US)

Representative: Leitz, Paul
Goodyear Technical Center
Patent Department
Avenue Gordon Smith
L-7750 Colmar-Berg (LU)

Decision under appeal: **Decision of the Examining Division of the European Patent Office posted 30 November 1998 refusing European patent application No. 96 110 857.8 pursuant to Article 97(1) EPC.**

Composition of the Board:

Chairman: A. Burkhart
Members: K. Poalas
J. H. P. Willems

Summary of Facts and Submissions

I. The Appellant (Applicant) lodged an appeal against the decision of the Examining Division refusing the European patent application No. 96 110 857.8.

II. The Examining Division held that the subject-matter of claims 1 and 8 did not involve an inventive step in the light of the closest prior art disclosed in the document

D1: GB-A-1 240 123,

when combined with the teaching of the state of the art described in the first six lines of paragraph 3 of the originally filed application.

III. The Appellant requested that the decision under appeal be set aside and a patent be granted on the basis of the following documents:

Description: pages 4 to 9 as originally filed, pages 2 and 3 as filed on 14 November 2001;

Claims: 1 to 9 as filed on 14 November 2001;

Drawings: sheet 1/1 as originally filed.

IV. Claim 1 reads as follows:

"A cured conveyor belt (5) with a core member having a series of rubberized parallel longitudinal metallic cables (6), covered on each side with a rubber layer

(15), on its top side at least one layer (10) of a rubberized closely spaced series of transversely positioned metallic cables (9) adhered to the core member, with a rubberized fabric layer (12) adhered below the core member, an upper cover (7) suitable for carrying a load and a pulley cover layer (14) beneath said fabric layer (12)."

Claim 8 reads as follows:

"A method of making a conveyor belt (5) as defined in any of claims 1-7 characterized in plying up the different layers as defined in any of claims 1-7 and curing them at a pressure of 200 to 500 psi (1,38 to 3,45 MPa) from 30 to 90 minutes."

V. In essence, the Appellant's arguments in support of the request are as follows:

Document D1, considered as being pertinent by the Examining Division, provides a passenger carrying belt with two layers of parallel transverse stiffening members with a layer of longitudinal parallel cables, the longitudinal cables being positioned between the two layers of parallel transverse members. The resulting three layers of parallel cables cooperate to produce a "beam" effect, offering excellent transverse stiffness and preventing any sagging in the transverse direction.

The use of a rubberized fabric layer adhered below the core member, as claimed in claim 1 of the present application, cannot be considered as being obvious, since the longitudinal cables in D1 are already protected by closely spaced transverse metallic cords.

It cannot be readily understood, why there should be a further fabric layer; and why this fabric layer should be on the side of the belt which is in fact heavily protected by both a layer of transverse cords and a layer of longitudinal cords.

The reasoning of the Examining Division concerning claims 1 and 8 is based on hindsight. Combining some constructive details taken out of D1 with the prior art cited in the description at paragraph 3, may result in several different combinations of transverse steel cables and fabric layers. Staying within the spirit of the prior art, i.e. protection of the longitudinal cables, would result in a belt where the longitudinal cables are protected by transverse cables and a fabric layer on top of the transverse cables.

Therefore, the subject-matter of claims 1 and 8 involves an inventive step.

Reasons for the Decision

1. *Amendments*

Independent claim 1 differs from claim 1 as originally filed in that the passage "...that exhibits superior resistance to penetration and tear testing ..." was deleted.

It is evident from the description as filed on page 2, lines 5 to 6, and page 3, line 18 that one of the primary aims of the invention is to provide a conveyor belt that exhibits superior resistance to penetration and tear testing. The omitted passage of claim 1 is

identical with the result to be achieved by the specific arrangement of metallic cables and different layers as defined in claim 1. This result does not itself provide a technical contribution to the subject-matter of the claimed invention.

Therefore, the omission of the above-mentioned "result"-feature does not extend the scope of claim 1 as filed, and claim 1 as amended does not therefore contravene the requirements of Article 123(2) EPC.

Claims 2 to 9 are essentially identical to originally filed claims 2 to 9.

The description was amended to adapt it to the claims and to indicate the prior art known from D1.

In view of the above, the amendments to the application do not give rise to objections under Article 123(2) EPC.

2. *Novelty*

None of the documents on file discloses a conveyor belt having a core member with parallel longitudinal metallic cables, on its top side a layer with transversely positioned metallic cables and a rubberized fabric layer adhered below the core member. Therefore, the subject-matter of claim 1 is novel.

The same applies to the method of claim 8, which, by reference to claim 1, comprises the same layer arrangement as the one of claim 1.

Novelty of the independent claims 1 and 8 was not

contested by the Examining Division.

3. *Inventive step*

3.1 Claim 1

3.1.1 Closest prior art

The closest prior art may be seen in a conveyor belt as described in document D1. D1 describes a cured conveyor belt with a core member (H) having a series of rubberized parallel longitudinal metallic cables (D), covered on each side with a layer (C, F) having rubberized closely spaced series of transversely positioned metallic cables adhered to the core member (H), and an upper cover (G) suitable for carrying a load.

The arrangement of the core member (H) together with the two layers (C and F) results in a stiffening of the belt in the transverse direction to produce a "beam" effect (see D1, column 1, lines 21 to 31).

Such a conveyor belt having a high transverse rigidity, however, is considered to be unsuitable for transporting rocks, shale, tramp metal or the like material, because it does not provide troughability to resist transverse movement of the material to be transported.

3.1.2 Problem underlying the invention

Therefore, the problem underlying the application with respect to the closest prior art may be seen in providing a conveyor belt having a troughing ability

and, at the same time, good bounce reaction to impact loads.

3.1.3 Solution

This problem is solved in accordance with claim 1 in that the belt known from D1 is modified in the sense that the rubber layer having transversely positioned metallic cables adhered below the core member is replaced by a rubberized fabric layer adhered below the core member, and in that a pulley cover layer beneath said fabric layer is provided.

3.1.4 This solution is not rendered obvious by the prior art, for the following reasons:

None of the documents representing the available prior art refers to the troughing effect and/or improved bounce reaction to impact loads. Furthermore, none of the documents suggests adhering below the core member of a conveyor belt having a core member with parallel longitudinal metallic cables and on its top side a layer with transversely positioned metallic cables, a rubberized fabric layer.

Document D1 teaches how to produce a "beam"-effect, i.e. a stiffening effect in the transverse direction of the conveyor belt using an upper and a lower layer, each layer having transversally positioned metallic cables. The skilled person starting from D1 would not derive from this document an indication to replace the lower layer having transversally positioned metallic cables by a rubberized fabric layer because such a layer would destroy the stiffening effect intended in D1.

Also the other documents on file do not lead the skilled person to the claimed solution, since each of these documents proposes the use of either a layer or layers having transversally positioned metallic cables or, instead of that, the use of a rubberized fabric layer or layers.

The state of the art as described in the first six lines of paragraph 3 of the application as filed does not disclose a prior art which goes beyond the prior art described in the documents on file. This passage states that the use of steel cables or a ply of fabric above or below the load carrying wire in conveyor belts is known. There is no reference in this text to the specific use of an upper layer having transversally positioned metallic cables together with a lower fabric layer.

3.1.5 Therefore, the subject-matter of claim 1 involves an inventive step in the sense of Article 56 EPC.

3.2 Claim 8

The method of claim 8 likewise involves an inventive step, since the method of claim 8 by reference to claim 1, comprises the same layer arrangement as the one of claim 1.

3.3 Claims 2 to 7 dependent on claim 1 and claim 9 dependent on claim 8 describe further embodiments of the present invention. Therefore, the subject-matter of claims 2 to 7 and 9 involves also 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 grant a patent in the following version:

   Description: pages 4 to 9 as originally filed;
   pages 2 and 3 as filed on 14 November 2001;

   Claims: 1 to 9 as filed on 14 November 2001;

   Drawings: Sheet 1/1 as originally filed.

The Registrar: The Chairman:

L. Martinuzzi A. Burkhart