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Datasheet for the decision of 14 December 2006

Case Number: T 0229/05 - 3.2.05

Application Number: 97930899.6

Publication Number: 1001876

IPC: B29D 30/32

Language of the proceedings: EN

Title of invention:
Tyre building drum with turn-up apparatus

Patentee:
VMI EPE HOLLAND B.V.

Opponent:
Matador, a.s.

Headword:
-

Relevant legal provisions:
EPC Art. 56

Keyword:
"Inventive step (yes)"

Decisions cited:
-

Catchword:
-

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Case Number: T 0229/05 **-** 3.2.05

D E C I S I O N
of the Technical Board of Appeal 3.2.05
of 14 December 2006

Appellant: (Opponent)
Matador, a.s.
Terézie Vansovej 1054/45
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Respondent: (Patent Proprietor)
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Decision under appeal:
Decision of the Opposition Division of the European Patent Office posted 13 December 2004 rejecting the opposition filed against European patent No. 1001876 pursuant to Article 102(2) EPC.

Composition of the Board:

Chairman: W. Moser
Members: P. Michel
H. Schram

Summary of Facts and Submissions

I. The appellant (opponent) lodged an appeal against the decision of the Opposition Division rejecting the opposition filed against European Patent No. 1 001 876.

II. The appellant requested that the decision under appeal be set aside and that the European Patent No. 1 001 876 be revoked in its entirety.

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

III. The following documents have, inter alia, been referred to in the appeal proceedings:

D2: DE-A-44 16 514
D7: "Methodics presentation for the critical simulation state of the special dynamic systems", from the Faculty of the Industrial Technologies in Púchov, April 2004
D8: VMI catalogue of VMI 248-S Systems, 2004
D9: Quality declaration of Continental Matador of 14.10.2004 with three certificates dated 15.07.1999, 27.08.2002 and 10.02.2004.

IV. Claim 1 as granted reads as follows:

"Tyre building drum with turn-up apparatus for building an unvulcanized tyre with tyre components of rubber or having reinforcement cords (1, 2; 1', 2') and two bead cores (3, 4; 3', 4') with high bead filling strips, said tyre building drum having a central axis (5; 5'), two ring segments (6, 7; 6', 7') placed around the axis

(5; 5') and spaced from each other each to support a bead core (3, 4; 3', 4'), drum segments formed by arms (11, 12; 11', 12') placed around the axis (5; 5') and on the outside of each of the ring segments (6, 7; 6', 7'), which drum segments (11, 12; 11', 12') define a cylindrical surface to support tyre components, means to radially expand that part of the tyre components which is situated between the ring segments, the tyre building drum having on both sides outside the ring segments (6, 7; 6', 7') a first set of axially extending, hingeable arms (11, 12; 11', 12'), each arm (11, 12; 11', 12') having an end directed at the ring segment (6, 7; 6', 7'), said end having a roller (13, 14; 13', 14'), means (15; 15') to axially and radially move each first set of arms (11, 12; 11', 12') from a first position in which the rollers (13, 14; 13', 14') of a first set of arms (11, 12; 11', 12') form a virtually closed ring to a second position in order to press the expanded part of the tyre components which is situated between the ring segments(6, 7; 6', 7') to the part of the tyre components which is situated outside the ring segments (6, 7; 6', 7'), characterized in that, each first set of arms (11, 12; 11', 12') contains a second set of axially extending, hingeable arms (17, 19; 17', 19'), each arm (17, 19; 17', 19') having an end directed at the ring segment (6, 7; 6', 7'), said end having a roller (16, 18; 16', 18'), each roller (16, 18; 16', 18') of an arm (17, 19; 17', 19') of the second set being situated between two adjacent arms (11, 12; 11', 12') of said first set and being situated on the side of the rollers (13, 14; 13', 14') of the arms (11, 12; 11', 12') of said first set, which side is turned away from the ring segments (16, 17; 16', 17'), and that means (15; 15') are provided to axially and

radially move each second set of arms (17, 19; 17', 19') from a first position in which the rollers (16, 18; 16', 18') of a second set of arms (17, 19; 17', 19') form a virtually closed ring, to a second position in order to press the expanded part of the tyre components which is situated between the ring segments (6, 7; 6', 7') to the part of the tyre components which is situated outside the ring segments (6, 7; 6', 7')."

V. The appellant has argued substantially as follows in the written proceedings:

Document D2 is the closest prior art. The subject-matter of claim 1 is distinguished over the disclosure of this document by the provision of a second set of arms.

As demonstrated by documents D7 to D9, the known tyre building drum having a single set of arms does not suffer from the disadvantages as alleged by the respondent. It is thus unrealistic to regard the problem to be solved as being to reduce the risk of air inclusions and consequently improve the attachment of the tyre components.

The provision of a second set of arms does not, in fact, provide any advantageous technical effect. In particular, the effect of the second set of arms is much less than that of the first set of arms.

Further, if a problem were to arise owing to the presence of gaps between the rollers, it would be obvious to use a second set of rollers, so that a

pressing force is applied to a greater proportion of the circumference of the tyre component.

The subject-matter of claim 1 thus does not involve an inventive step.

VI. The respondent has argued substantially as follows in the written proceedings:

Document D2 is regarded as being the closest prior art. In the tyre building drum disclosed in document D2, as the arms are displaced towards their second position, the circumferential gap between the arms increases, allowing the occurrence of air inclusions between the tyre components and the tyre carcass. The object of the invention is to avoid the occurrence of such air inclusions. This problem is solved by the provision of a second set of arms as defined in claim 1 of the patent in suit.

The prior art does not suggest providing a tyre building drum with a second set of arms as defined in claim 1.

The subject-matter of claim 1 thus involves an inventive step.

Reasons for the Decision

1. The closest prior art is represented by document D2, which discloses a tyre building drum having all the features of the pre-characterising portion of claim 1.

The subject-matter of claim 1 of the patent in suit is distinguished over the disclosure of document D2 by the provision of a second set of arms having rollers which, in use, apply a force to a tyre component between the rollers of the first set of arms when they are in the second position. In this way, a force is applied to a greater proportion of the circumference of the tyre component, thereby reducing the risk of air inclusions and consequently improving the attachment of the tyre components.

The problem to be solved is thus to improve the attachment of the tyre components.

The solution to this problem as defined in claim 1 is not suggested in the cited prior art.

With the support of documents D7 to D9, the appellant has argued that the known tyre building drum having a single set of arms does not suffer from the disadvantages as alleged by the respondent. However, the second set of arms has the function of enabling a force to be applied to a greater proportion of the circumference of the tyre component, so that attachment of the tyre components is facilitated.

Thus, whilst it may be the case that there is only a comparatively low risk of air inclusions when using the apparatus of the prior art, nevertheless, owing to the fact that a force is applied to an increased proportion of the circumference of the tyre component when using the apparatus as defined in claim 1 of the patent in suit, the Board is of the opinion that the problem as set out above is, in fact, solved according to the

invention. The fact that the effect of the second set of arms may be small as compared with that of the first set is not seen as affecting this argument.

Thus, the subject-matter of claim 1 involves an inventive step and the appeal is to be dismissed.

2. Since the respondent requested oral proceedings only in case the Board were to allow the appeal, oral proceedings could be dispensed with.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar: The Chairman:

D. Meyfarth W. Moser