Datasheet for the decision of 7 November 2013

Case Number: T 0402/09 - 3.4.03
Application Number: 94911651.1
Publication Number: 746870
IPC: H01J37/30, G01N21/00, G21K5/10, B61B10/02, B65B55/16, A23L3/26
Language of the proceedings: EN

Title of invention:
IRRADIATION SYSTEM UTILIZING CONVEYOR-TRANSPORTED ARTICLE CARRIERS

Patent Proprietor:
THE TITAN CORPORATION

Opponent:
ION BEAM APPLICATIONS S.A.

Headword:

Relevant legal provisions:
EPC 1973 Art. 56, 84, 100(a), 100(b), 100(c)
EPC R. 80

Keyword:
Amendment occasioned by ground for opposition - (yes)
Grounds for opposition - late-filed ground for opposition
Amendments - added subject-matter (no)
Claims - clarity (yes)
Sufficiency of disclosure - (yes)
Inventive step - (yes)
Decisions cited:
G 0010/91

Catchword:
Case Number: T 0402/09 - 3.4.03

DECISION
of Technical Board of Appeal 3.4.03
of 7 November 2013

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Decision under appeal: Interlocutory decision of the Opposition
Division of the European Patent Office posted on
11 December 2008 concerning maintenance of the

Composition of the Board:
Chairman: T. Bokor
Members: T. M. Häusser
        R. Q. Bekkering
Summary of Facts and Submissions

I. The appeal of the opponent concerns the interlocutory decision of the opposition division to maintain the European patent EP-B-746870 as amended during the opposition proceedings (Article 101(3)(a) EPC).

II. The opposition had been filed against the patent as a whole. Grounds of opposition were insufficiency of the disclosure and lack of inventive step (Articles 100(a) and (b), 56 EPC 1973).

III. Oral proceedings before the board took place in the absence of the duly summoned appellant (opponent), of which the board had been informed in advance.

At the oral proceedings the respondent (proprietor) requested that the appeal be dismissed.

In writing the appellant (opponent) had requested that the decision under appeal be set aside and that the patent be revoked in its entirety.

IV. Reference is made to the following documents:

D1: US 3 564 241 A,
D2: EP 0 237 299 A,
D2c: US 4 653 630 A,
D2d: US 5 038 911 A,
D6: GB 962 477 A,
D7: US 4 584 944 A,
D11: DE 3 303 370 A,
D16: FR 2 596 192 A.

V. The wording of independent claim 1 as maintained by the opposition division reads as follows:
"1. Irradiation system apparatus for sterilizing articles, comprising a radiation source, a plurality of article carriers (17); a process conveyor (14) for transporting the article carriers past the radiation source (10) at a first speed; a transport conveyor (12) for transporting the article carriers from a loading area (34) at a second speed that differs from said first speed; and a load conveyor (13) adapted for engaging the article carriers and for transporting the engaged article carriers from the transport conveyor to position the article carriers on the process conveyor in such a manner that when the article carriers are positioned on the process conveyor there is a predetermined separation distance between adjacent positioned article carriers;
characterised in that a controller (65, 18) varies the speed of the load conveyor during said transport by the load conveyor,
the controller (18) being adapted in accordance with the speed of the process conveyor (14) for causing the load conveyor (13) to be transporting the article carrier (17) at the same speed as the process conveyor when the load conveyor positions the article carrier on the process conveyor
and wherein the transport conveyor (12) is an overhead power-and-free conveyor that maintains contact with the article carriers (17) as the article carriers are being transported past the radiation source (10) by the process conveyor (14) at a speed independent of the speed of the transport conveyor, and transports the article carriers away from the process conveyor after the article carriers are transported past the radiation source, and
the process conveyor (14) includes a level section (81) which supports the article carriers (17) while the
article carriers are being transported past the radiation source (10) and an upwardly inclined section (82) onto which the article carriers transported by the load conveyor (13) are positioned on the process conveyor (14) so that the article carriers are elevated as they are positioned on the process conveyor so that the article carriers are not supported by the overhead transport conveyor (12) while being transported by the process conveyor past the radiation source."

VI. The parties argued essentially as follows:

a) Rule 80 EPC and clarity (Article 84 EPC 1973)

The appellant argued that the addition of the expression "for sterilizing articles" in claim 1 was not occasioned by a ground of opposition. Furthermore, it was not clear whether the expression referred to the radiation source or to the article carrier. The appellant raised the question, what restrictions were meant by the addition.

The respondent was of the opinion that the feature "for sterilizing articles" was introduced to distinguish the invention from document D2, which was not concerned with sterilization. Furthermore, it was clear from the wording of the claim that the apparatus was for sterilizing articles by irradiating them.

b) Amendments

The appellant argued that paragraphs [0024] and [0025] of the patent could not be regarded as sufficient support for the addition of the expression "for sterilizing articles" in claim 1, since these paragraphs referred to the article carriers but not the
irradiation system apparatus. Furthermore, the term "sterilize" was used always in association with an electron beam in the claims as filed. The expression constituted therefore an extension of subject-matter.

Moreover, claims 2 to 10 depended on claim 1 and the subject-matter of these claims therefore also extended beyond the content of the application as filed.

Therefore, the requirements of Article 123(2) EPC were not fulfilled.

In addition, the appellant regarded the following amendments to extend beyond the application as filed:
- claim 1 being a combination of claims 1, 2, 5 and 6 as granted;
- claim 1 failing to mention that the predetermined separation distance was a consequence of the speed variation during the transport by the load conveyor.

The respondent regarded the ground of opposition under Article 100(c) EPC 1973 as a fresh ground and did not agree to this fresh ground being considered during the present appeal proceedings.

Claims 4 to 10 corresponded to claims 7 to 10 and 12 to 14 as granted. Therefore, the subject-matter of these claims has not been amended and the ground of objection should not be available. Furthermore, all the claims related to the same embodiment, so the combination of the features was not adding to the disclosure. In addition, the feature "for sterilizing articles" was supported by paragraphs [0001], [0002], [0024] and [0025] and did not add subject-matter.
c) Sufficiency of disclosure

The appellant was of the opinion that not all essential features were recited in claim 1 which therefore encompassed embodiments that could not work in the sense that the intended result could not be achieved. In particular, the specific mechanism allowing the transfer from the transport conveyor to the load conveyor and the speed profiles were presented as essential in the description but had not been included in claim 1. Therefore, claim 1 covered embodiments that the skilled person would not be able to carry out for the intended purpose.

The respondent argued that the crux of the invention was to achieve consistent close spacing between the article carriers on the process conveyor in order to efficiently utilize the energy from the radiation source, which was achieved by the features of claim 1. The particular escapement of claim 3 and the specific speed profiles were merely one way the invention could work. The invention was thus sufficiently disclosed.

d) Inventive step

The appellant regarded document D1 as the closest state of the art, from which the claimed invention differed in comprising a controller that varied the speed of the load conveyor and in that the process conveyor comprised a level section and an upwardly inclined section. The remaining features were described in document D2c (claim 1 and Figure 1); by combining the teaching of D1 and D2c the person skilled in the field of conveyor systems would arrive at the claimed invention.
Furthermore, it was common general knowledge (see e.g. documents D6, D7 or D11) to provide level and upwardly inclined sections for smooth transfer of an article between conveyors at different levels. Document D2d (abstract) described a speed controller for controlling the running speed such that a desired gap between packages was achieved and documents D2 and D16 were equally relevant. Therefore, the subject-matter of claim 1 lacked an inventive step in view of document D1 in combination with common general knowledge and one of the documents D2, D2d and D16.

The respondent was of the opinion that the objective technical problem was to use the radiation source efficiently. The feature of claim 1 relating to the load conveyor and the process conveyor having the same speed when the article carrier was positioned on the process conveyor ensured no slip and thus allowed an accurate placement of the article carriers. Furthermore, the feature of claim 1 relating to the upwardly inclined section of the process conveyor allowed an accurate placement of the leading edge of the article carrier. The feature of claim 1 relating to the transport conveyor maintaining contact with the article carriers as they were transported past the radiation source by the process conveyor provided guiding of the article carriers so that swinging of the article carriers could be avoided. Hence, all these features contributed to the close spacing between article carriers on the process conveyor and allowed the radiation source to be efficiently used. Neither document D2c nor document D2d provided support at the top and bottom of the article; it was also difficult to see how the teaching of these documents could be combined with that of D1. Document D2 was no closer than these documents and provided no speed-matching.
Document D16 was even further away from the claimed invention.

Therefore, the subject-matter of claim 1 involved an inventive step.

**Reasons for the Decision**

1. Admissibility

   The appeal is admissible.

2. Rule 80 EPC and clarity

   Claim 1 commences with the words "Irradiation system apparatus for sterilizing articles". In accordance with standard claim construction the expression "for sterilizing articles" is understood to mean that the claimed apparatus is suitable for sterilizing articles (cf. the Guidelines, F-IV, 4.13) and is therefore considered to be clear. Accordingly, claim 1 complies with the requirement of clarity under Article 84 EPC 1973.

   The addition during opposition proceedings of the above expression in claim 1 implies that the radiation source of the irradiation system apparatus must have sufficiently high energy such that the apparatus is in fact able to sterilize the articles (see the description of the application, page 1, lines 8-12). By way of introduction of the expression into claim 1 the claimed subject-matter is therefore restricted. Consequently, the amendment is apt to overcome an objection as to lack of novelty or inventive step and
is thus considered to be occasioned by a ground for opposition as required by Rule 80 EPC.

3. Amendments

3.1 Article 100(c) EPC 1973

3.1.1 The ground for opposition under Article 100(c) EPC 1973 has neither been properly substantiated by the opponent during the nine-month opposition period nor been introduced by the opposition division of its own motion under Article 114(1) EPC 1973 (see Reason 1 of the decision under appeal).

Furthermore, the respondent has not agreed to the fresh ground to be considered during the appeal proceedings.

Therefore the ground for opposition under Article 100(c) EPC 1973 may not be introduced into the present appeal proceedings (see Reason 18 of the decision G 10/91 of the Enlarged Board of Appeal).

3.1.2 In particular, the appellant argued that in claim 1 the predetermined separation distance and the speed variation of the load conveyor were not correlated even though it followed from the application documents as filed that the separation distance was a direct consequence of the speed variation. However, the feature of claim 1 which is concerned by this objection ("and a load conveyor ... adjacent positioned article carriers") was already present in claim 1 as granted.

Furthermore, the appellant argued that claim 1 being a combination of granted claims 1, 2, 5, and 6 had no basis in the application documents as filed because no equivalent combination of the original claims could be
found having regard to their mono-dependency relation. However, granted claims 5 and 6 do not exhibit the stated mono-dependency. Rather, the combination of the features of granted claims 1, 2, 5 and 6 results from the dependencies of granted claims 2, 5, and 6.

Moreover, the appellant argued that the subject-matter of dependent claim 2 had only been filed after the filing date. However, claim 2 corresponds essentially to granted claim 3. Furthermore, the combination of the features of granted claims 1, 2, 3, 5, and 6 results from the dependencies of granted claims 2, 3, 5, and 6.

Similarly, according to the appellant the combination of features of dependent claim 3 had not been disclosed in the application as filed. However, that combination follows from the granted claims.

Consequently, all of the above objections as to added subject-matter concern features which had already been present in the granted version of the claims and therefore cannot be considered in the current appeal proceedings.

3.2 Article 123(2) EPC

3.2.1 The claims also comprise amendments that were effected during the opposition proceedings. Such amendments are to be fully examined as to their compatibility with the requirements of the EPC, in particular with regard to the provisions of Article 123(2) EPC (see Reason 19 of the decision G 10/91 of the Enlarged Board of Appeal).

3.2.2 As discussed above, the expression "for sterilizing articles" was introduced into claim 1 during the opposition proceedings. In the decision under appeal
the opposition division regarded paragraphs [0024] and [0025] of the patent specification as a basis for the amendment. The appellant argued that these paragraphs referred to the article carriers but not the irradiation system apparatus. Furthermore, the term "sterilize" was used always in association with an electron beam in the claims as filed.

The above paragraphs correspond to the original description, page 9, last paragraph - page 10, first paragraph. In this passage the article carriers 17 are described in relation to Figures 3A, 3B and 3C and it is described how the "articles to be sterilized" are to be placed in relation to the article carriers. In particular, it is specified that elongated articles are to be placed such that they are irradiated approximately normal to the long dimension "to thereby achieve optimum article sterility together with optimum article throughput efficiency with respect to utilization of the energy of the radiation beam emitted by the radiation source 10 as the articles are transported past the radiation source 10". It is thus evident for the skilled person from that passage that optimum sterility may in fact be achieved using the apparatus and hence that the apparatus is perfectly suitable for sterilizing the articles.

Furthermore, in the above passage a "radiation source 10" is referred to in general terms without mentioning any particular type of radiation source. Moreover, various types of radiation sources for the purpose of sterilizing articles are mentioned on page 1, second paragraph, where the background of the invention is discussed. It is therefore evident for the skilled person when reading the application documents as filed
that sterility may be achieved using various different types of radiation sources.

It is therefore directly and unambiguously derivable from the application as filed that the irradiation system apparatus is for sterilizing articles.

3.2.3 The appellant was also of the opinion that the subject-matter of claims 4 to 10 extended beyond the content of the application as filed.

The additional features of claims 4 to 10 have been disclosed in original claims 6, 7 and 9, 7 and 10, and 11-14, respectively. They relate to various aspects of the only irradiation system apparatus described in the application. The combination of the features concerning these aspects with the features of claim 1, which relate to other aspects of the same irradiation system apparatus, is thus considered to be directly and unambiguously derivable for the skilled person from the application as filed.

3.2.4 The board is therefore satisfied that the amendments effected during the opposition proceedings comply with the requirements of Article 123(2) EPC.

4. Sufficiency of disclosure

4.1 The appellant argued that since no specific mechanism for transferring the article carriers from the transport conveyor to the load conveyor was specified in claim 1, that claim encompassed the case where the article carriers were fixed on the transport conveyor and were already at a predetermined distance of each other.
As pointed out by the respondent it is specified in claim 1 that the transport conveyor is an "overhead power-and-free conveyor that maintains contact with the article carriers (17) as the article carriers are being transported past the radiation source (10) by the process conveyor (14) at a speed independent of the speed of the transport conveyor" and that the process conveyor is such that "the article carriers are not supported by the overhead transport conveyor (12) while being transported by the process conveyor past the radiation source".

Consequently, even if the article carriers were at a predetermined distance of each other on the transport conveyor, according to the terms of claim 1, this would not have any bearing on the distance between the article carriers when they are being transported past the radiation source. The intended purpose of the invention of achieving close spacing between the carriers on the process conveyor could therefore still be achieved.

4.2 Furthermore, the appellant argued that the word "must" was used in relation to several time intervals of the speed profile described in the application and that the corresponding features had to be included in claim 1. However, the particular time intervals relate to the specific speed profile shown in Figure 7A which is not considered to be essential for achieving close spacing between the article carriers.

4.3 The board is therefore satisfied that the patent puts the skilled person in possession of at least one way of putting the claimed invention into practice and that the skilled person could put the invention into practice over the whole scope of claim 1. Therefore,
the patent discloses the invention in a manner sufficiently clear and complete for it to be carried out by the person skilled in the art (Articles 83 and 100(b) EPC 1973).

5. Inventive step

5.1 Closest state of the art

Both parties consider document D1 as the closest state of the art. Indeed, document D1 is conceived for the same purpose as the invention, namely to provide an irradiation system apparatus for sterilizing articles, and has the most relevant technical features in common with it. Document D1 is therefore regarded as the closest state of the art.

5.2 Distinguishing features

5.2.1 Document D1 discloses (see column 2, lines 38-57; column 3, lines 8-52; column 4, lines 17-56; Figures 1 and 2) a shielding block 1 containing an irradiation chamber 2, which is accessible to the outside through a supply passage 3 and contains a radiation source 4, for example cobalt 60 rods. Slow-moving closed loop chain conveyors 5, 6 are disposed on opposite sides of the radiation source 4. Furthermore, a fast-moving closed loop chain conveyor 7 is disposed within the supply passage 3, partially outside the shielding block 1 and partially inside the irradiation chamber 2 and serves to communicate a loading-unloading and transfer station 8 outside the shielding block 1 to the irradiation chamber 2 through the supply passage 3.

In operation, individual loads to be irradiated are mounted in trolleys 20 which are conveyed by the chain
conveyor 7 through the supply passage 3 into the irradiation chamber 2. At a point 21 the trolleys 20 are taken over by the slow-moving chain conveyor 5. Next to the paths of the chain conveyors 5-7 there is a continuous T-section roller track 32. Each trolley 20 is suspended from the track 32 by means of rollers 33, 34 which run along the arms of the T-section track 32.

Curved catches 83 are attached to outer links on the chain 7 at suitable intervals to abut projections 37 of the trolleys 20 to push the trolleys 20 along the track 32 and similarly the central links of the chain 5 carry straight catches 84 at intervals corresponding to the length of the trolley boxes.

The fast chain conveyor 7 drives the slow chain conveyor 5 through a transmission which includes chain wheels 85 and 93, on which the chains 5 and 7 are respectively mounted, and transmission wheels 88 and 95.

5.2.2 Using the wording of claim 1 document D1 discloses therefore an irradiation system apparatus for sterilizing articles (the cobalt 60 rods used as the radiation source 4 are suitable for that purpose), comprising a radiation source (4) a plurality of article carriers (trolleys 20); a process conveyor (slow-moving chain conveyor 5) for transporting the article carriers (trolleys 20) past the radiation source (4) at a first speed (slow speed); a transport conveyor (combination of roller track 32 and fast-moving chain conveyor 7) for transporting the article carriers (trolleys 20) from a loading area (loading-unloading and transfer station 8) at a second speed (fast speed) that differs from said first speed;
and wherein the transport conveyor (combination of roller track 32 and fast-moving chain conveyor 7) is an overhead power-and-free conveyor that maintains contact (through the roller track 32) with the article carriers (trolleys 20) as the article carriers are being transported past the radiation source (4) by the process conveyor (slow-moving chain conveyor 5) and transports the article carriers away from the process conveyor after the article carriers (trolleys 20) are transported past the radiation source (4).

5.2.3 The subject-matter of claim 1 differs from the apparatus of D1 in comprising the following distinguishing features:
(a) a load conveyor adapted for engaging the article carriers and for transporting the engaged article carriers from the transport conveyor to position the article carriers on the process conveyor in such a manner that when the article carriers are positioned on the process conveyor there is a predetermined separation distance between adjacent positioned article carriers,
(b) a controller varying the speed of the load conveyor during said transport by the load conveyor,
(c) the controller being adapted in accordance with the speed of the process conveyor for causing the load conveyor to be transporting the article carrier at the same speed as the process conveyor when the load conveyor positions the article carrier on the process conveyor,
(d) the process conveyor having a speed independent of the speed of the transport conveyor,
(e) the process conveyor including a level section which supports the article carriers while the article carriers are being transported past the
radiation source and an upwardly inclined section onto which the article carriers transported by the load conveyor are positioned on the process conveyor so that the article carriers are elevated as they are positioned on the process conveyor so that the article carriers are not supported by the overhead transport conveyor while being transported by the process conveyor past the radiation source.

5.3 Objective technical problem

The respondent was of the opinion that the objective technical problem was to use the radiation source efficiently.

This can be also be deduced from the patent specification where the following is stated (see paragraph [0030]): "In order to most efficiently utilize the energy of the radiation beam emitted by the radiation source 10, the spacing between the article carriers 17 as they are transported by the process conveyor 14 past the radiation source 10 must be as small as practically possible". The efficient use of the radiation source is thus achieved by positioning the article carriers 17 as closely as possible on the process conveyor 14.

As pointed out by the respondent the feature of claim 1 relating to the article carrier having the same speed as the process conveyor when the load conveyor positions the article carrier on the process conveyor (distinguishing features (a) and (c)) ensures that there is no slip between the article carriers and the process conveyor and thereby allows the article carriers to be closely spaced on the process conveyor.
Furthermore, the feature of claim 1 relating to the upwardly inclined section of the process conveyor (distinguishing feature (e)) allows the accurate placement of the leading edges of the article carriers. Moreover, the feature of claim 1 relating to the process conveyor including a level section which supports the article carriers while they are being transported past the radiation source (distinguishing feature (e)) in combination with the feature of claim 1 (known from D1) of the transport conveyor maintaining contact with the article carriers as they are being transported past the radiation source ensures a two-point contact and thus allows swinging of the article carriers to be avoided.

Accordingly, distinguishing features (a), (c) and (e) allow the article carriers to be closely spaced on the process conveyor and thus the radiation source to be used efficiently. It is therefore considered to be the objective technical problem to achieve this object.

5.4 Obviousness

5.4.1 The respondent regarded the designer in the field of irradiation systems to be the relevant skilled person. The appellant considered the skilled person to be the expert in the field of conveyor systems. As the objective technical problem prompts the skilled person to seek the solution in the field of conveyor systems, the board agrees with the appellant's opinion in this respect.

As the documents D2, D2c, D2d, D6, D7, D11, and D16 are related to the field of conveyor systems, the skilled person would consider these documents in order to solve the posed problem.
5.4.2 The appellant is of the opinion that document D2c described an upwardly inclined conveyor section. That document describes (see column 3, lines 8-31 and claim 1) the transfer of articles 2 on a first belt 1 via intermediate belts 3, 4, and 6 to predetermined locations 80 on a second belt 7. It is also described that upstream and downstream belts are synchronized at the instant of article transfer. In the Figures 1, 3, and 4 of D2c it is furthermore shown that the belt 6 is inclined. However, in the direction of transport of the articles 2 the belt 6 is sloping downwards. Moreover, the inclination is not conducive to accurate placement of the leading edges of the articles 2.

Furthermore, according to the teaching of document D2c the transfer of the articles 2 is effected entirely by means of supporting belt conveyors. It is neither suggested in D2c that these belts could be combined with the conveyors of the overhead type described in document D1 nor is such a combination judged to be obvious for the person skilled in the art in view of his common general knowledge. Rather, in the board's opinion the skilled person would, if he wanted to use the teaching of D2c in the apparatus of D1, replace the overhead conveyors of D1 by the belt conveyors of D2c.

Consequently, when attempting to solve the posed technical problem, the skilled person would not be led to the claimed subject-matter by considering document D2c.

5.4.3 Documents D2 and D2d relate to belt conveyor systems for controlling the spacing between articles and are not closer to the claimed subject-matter than document D2c. Document D16 relates to a system for irradiating
articles with gamma rays using a conveyor system which is not closer to the claimed subject-matter than document D1.

Documents D6, D7 and D11 were cited by the appellant as evidence that a conveyor comprising an upwardly inclined section was well-known in the art. Documents D6 and D11 relate to overhead conveyor systems with inclined sections. However, in these documents these sections merely serve to transport the articles to a different height. Document D7 relates to (see column 2, line 30 - column 3, line 36) transferring a load 50 supported by a carrier 14 mounted on the carrier track 12 of an overhead conveyor 10 to a belt conveyor 60. In order to effect the transfer the overhead conveyor 10 is sloping downwards in the direction of movement. Moreover, the load 50 is either supported by the carrier 14 or the supporting surface of the belt conveyor 60 and has wheels 51 for engaging that supporting surface. Consequently, the arrangement is neither conducive to accurate placement of the leading edges of the loads 50 nor to avoiding their longitudinal displacement (cf. D7, column 4, lines 27-30).

The teaching of these documents is therefore not considered to lead the skilled person to the claimed subject-matter, either.

5.4.4 In view of the above, the subject-matter of claim 1 involves an inventive step. Claims 2 to 10 are dependent on claim 1.

Accordingly, the subject-matter of claims 1 to 10 involves an inventive step (Article 52(1) EPC and Article 56 EPC 1973).
Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar: The Chairman:

S. Sánchez Chiquero T. Bokor

Decision electronically authenticated