

Internal distribution code:

- (A) [-] Publication in OJ
(B) [-] To Chairmen and Members
(C) [-] To Chairmen
(D) [X] No distribution

**Datasheet for the decision
of 4 December 2017**

Case Number: T 0152/16 - 3.2.04
Application Number: 07808689.9
Publication Number: 2048958
IPC: A22B7/00, A22C18/00, G01N23/00,
G01N33/12, A22B5/00, A22C17/00,
G01N23/04
Language of the proceedings: EN

Title of invention:

AN IMAGING APPARATUS AND METHOD OF DETERMINING A CUTTING PATH
AND GRADING A CARCASS

Applicant:

Robotic Technologies Limited

Headword:

Relevant legal provisions:

EPC Art. 123(2)

Keyword:

Amendments - intermediate generalisation - extension beyond
the content of the application as filed (yes)

Decisions cited:

G 0002/10

Catchword:



Beschwerdekammern
Boards of Appeal
Chambres de recours

Boards of Appeal of the
European Patent Office
Richard-Reitzner-Allee 8
85540 Haar
GERMANY
Tel. +49 (0)89 2399-0
Fax +49 (0)89 2399-4465

Case Number: T 0152/16 - 3.2.04

D E C I S I O N
of Technical Board of Appeal 3.2.04
of 4 December 2017

Appellant: Robotic Technologies Limited
(Applicant) 630 Kaikorai Valley Road
Dunedin 9011 (NZ)

Representative: Miller, James Lionel Woolverton
Kilburn & Strode LLP
Lacon London
84 Theobalds Road
London WC1X 8NL (GB)

Decision under appeal: **Decision of the Examining Division of the
European Patent Office posted on 15 June 2015
refusing European patent application No.
07808689.9 pursuant to Article 97(2) EPC.**

Composition of the Board:

Chairman W. Van der Eijk
Members: J. Wright
S. Oechsner de Coninck

Summary of Facts and Submissions

I. The Appellant-applicant lodged an appeal, received on 28 July 2015, against the decision of the examining division posted on 15 June 2015 refusing European patent application No. 07808689.9 pursuant to Article 97(2) EPC and paid the fee for appeal at the same time. The statement setting out the grounds of appeal was received on 21 October 2015.

The examining division held, *inter alia*, that claims of the application according to the various requests then on file, did not meet the requirements of Article 84 EPC.

II. In a communication dated 2 October 2017, the Board gave its preliminary opinion that claims according to all requests added subject matter extending beyond the application as filed. Oral proceedings before the Board were duly held on 4 December 2017.

III. The appellant requests that the decision under appeal be set aside and a patent be granted on the basis of a set of claims according to a main request filed with the grounds of appeal, or in the alternative, on the basis of one of sets of claims according to a first auxiliary request, filed with the grounds of appeal, or according to a second or a third auxiliary request filed with letter dated 27 November 2017.

IV. Claim 1 of the requests reads as follows:

Main request:

"A method of determining a cutting path including the steps of:

- a. obtaining X-ray images of a carcass (10), each image being obtained from a different perspective as a hanging carcass (10) passes between a non-moving X-ray source (13) and a non-moving linear X-ray detector (6);
- b. determining the spatial configuration of elements of the carcass by identifying a point of the carcass on each X-ray image and for each point intersecting a ray from the X-ray source to the point on the X-ray detector with a ray from a virtual X-ray source to the point on a virtual X-ray detector to give height and distance from the source; and
- c. determining a cutting path for cutting the carcass (10) based on the spatial configuration of the elements of the carcass (10)".

Claim 1 of the first auxiliary request reads as for the main request except that the wording of feature b) is replaced by the following wording:

"b. determining the spatial configuration of elements of the carcass by identifying a point of the carcass on each X-ray image and calculating the position of a virtual x-ray source and detector for one scan by translating a reference point of one image to the reference point of another image and for each point intersecting a ray from the X-ray source to the point on the X-ray detector with a ray from the virtual X ray source to the point on the virtual X-ray detector to give height and distance from the source; and"

Second auxiliary request:

"A method of determining a cutting path including the steps of:

- a. using a non-moving X-ray source (13) and a non-moving linear X-ray detector (6) to obtain a first X-ray image of a hanging carcass (10);
 - b. moving said carcass (10) to be at a different position with respect to said X-ray source (13);
 - c. using a non-moving X-ray source (13) and a non-moving linear X-ray detector (6) to obtain a second X-ray image of said carcass (10) from a different perspective;
 - d. determining the spatial configuration of elements of the carcass (10) based on the first and second X-ray image; and
 - e. determining a cutting path for cutting the carcass (10) based on the spatial configuration of the elements of the carcass;
- wherein the method enables imaging and processing to be performed in a continuous conveyor operation".

Claim 1 or the third auxiliary request reads as claim 1 of the second auxiliary request, except for the deletion of the final feature of the latter ("wherein the method enables imaging and processing to be performed in a continuous conveyor operation").

- V. The appellant-applicant argued, as far as is relevant for the present decision, as follows:

The subject matter of claim 1 according to all requests does not contain added subject matter because the application as filed contains a basis for claim 1 in all its versions.

Reasons for the Decision

1. The appeal is admissible.

2. Added subject matter

2.1 In deciding the question of allowability of amendments under Article 123(2) EPC, the Board, following well established practice (see Case Law of the Boards of Appeal, 8th edition, 2016 (CLBA), II.E.1.2.1 and the decisions cited therein), must consider whether the amendments in question are directly and unambiguously derivable by the skilled person from the application as filed, using normal reading skills and, where necessary, taking account of their general knowledge. This is the "gold" standard according to which amendments are assessed (see G2/10, reasons 4.3).

2.2 Furthermore (see CLBA, II.E.1.7 and the decisions cited therein), according to established case law, it will normally not be allowable to base an amended claim on the extraction of isolated features from a set of features originally disclosed only in combination, e.g. a specific embodiment in the description. Such an amendment results in an "intermediate generalisation". An intermediate generalisation is justified only in the absence of any clearly recognisable functional or structural relationship among the features of the specific combination or if the extracted feature is not inextricably linked with those features.

2.3 Main request

2.3.1 Claim 1 is said to be based on claim 1 as originally filed. Clause b) of that claim was worded "determining the spatial configuration of elements of the carcass based on the X-ray images". Clause b) of the present claim 1 request adds the features of:

"identifying a point of the carcass on each X-ray image and for each point intersecting a ray from the X-ray source to the point on the X-ray detector with a ray from a virtual X-ray source to the point on a virtual X-ray detector to give height and distance from the source. The appellant-applicant argues that this feature has a basis on page page 12, second paragraph.

2.3.2 In the Board's view, as will be explained below (with reference to the application as published), the added features are only originally presented in a tight structural and functional relationship with other features that have not been claimed. Therefore, following the approach outlined above, claim 1 represents an intermediate generalisation which adds subject matter extending beyond the application as filed.

2.3.3 Page 12, second paragraph, explains the image processing associated with the detailed embodiment of the invention. This embodiment is explained starting on page 10, second paragraph with reference to figure 1. There the carcass hangs from an overhead meat rail conveyor and passes through an X-ray beam (page 10, lines 6 to 7). After taking the first image (page 10, lines 13 to 15), the carcass is turned through 180° and moves around a loop that turns through 180°, so that when it passes the same X-ray beam for a second time, it has the same orientation as when it passed the first time (page 10, lines 16 to 21 and figure 1).

Thus the images referred to in page 12, second paragraph are taken by the same non-moving X-ray source/detector system, with the orientation of the carcass constant in the two images. These two factors mean that imaging is always in parallel planes of the

carcass (see also figures 1 and 2). Thus there is a specific correlation between successive images.

2.3.4 None of the above features of the embodiment which lead to this correlation - turning the carcass through 180° as it moves on a track that loops back on itself, first and second images being taken by the same X-ray source/detector system - have been claimed. The claim makes no mention of how the carcass is moved between taking first and second images, and leaves open whether or not the same X-ray source/detector system obtains both images.

2.3.5 However, what has been amended in feature b) is, inter alia, "identifying a point on the carcass on each X-ray image" and, for each of these points, using the claimed intersection of rays between real and virtual X-ray source/detector systems to give height and distance from the source. In the Board's view, the height and distance from the source can only be so determined because the identified point in the carcass, the X-ray source and detector all lie in the same plane from one image to the next. Were this not so, for example if the animal's orientation had changed between images, any identified point of the carcass would be in points in space not relatable to the geometry of the system (cf. page 12, lines 1 to 5) in the way claimed. Thus, calculating the intersection of rays as claimed would not reveal the height and distance of the identified point from the source as the claim requires. Therefore, the claimed intersection feature is only originally disclosed in a particular functional and structural relationship with other features that have not been claimed (inter alia that both images are generated by the same, that is single, X-ray source/detector system, and furthermore turning the carcass through 180° as it

back-tracks on itself in a loop so that its orientation is the same when images are obtained).

- 2.3.6 Nor (cf. published application, page 12, lines 1 to 2 and lines 10 to 13) does the Board agree with the appellant-applicant's opinion that the choice of one of the meat-rails as a reference point in each image (not claimed) is arbitrary, thus structurally and functionally unrelated to the (claimed) feature of determining the spatial configuration of the carcass by intersecting real and virtual X-rays.

The carcass hangs from the meat rail (page 10, lines 5 to 7). Thus, with its orientation unchanged from first to second image, the spatial arrangement between meat rail and carcass is constant between the two images. This constancy gives significance to the translation of the rail's position as reference point in one image scan, to the reference point (rail) in the second image scan. It follows that choosing the rail as the reference point, followed by the step of intersecting the ray from X-ray source to detector in the one image with the ray between the virtual X-ray source/detector ray in a second, contributes to allowing the height and distance of a point on the carcass from the X-ray source to be calculated (page 12, lines 10 to 15). Thus, in the Board's view, clause b) as amended to include intersecting rays between real and virtual X-ray source/detectors is only originally disclosed in a tight structural and functional relationship, in other words inextricably linked, with making the reference point, the origin of the three dimensional space, the meat-rail. Since however the latter feature has not been claimed, also for this reason claim 1 adds subject matter beyond the application as filed.

- 2.3.7 For all the above reasons, claim 1 is an intermediate generalisation which adds subject matter extending beyond the application as filed.
- 2.3.8 In this regard, the Board is not convinced by the appellant-applicant's argument that the broad scope of original claim 1, merely by not incorporating features of the embodiment into the claim as identified above (such as the first two images being taken by the same X-ray source/detector pair and the meat rail being chosen as the origin of three dimensional space) justifies not incorporating these features into claim 1 as now amended.
- 2.3.9 It is true that original claim 1 did not contain these features. However, irrespective of certain of these features being found in dependent claims, original claim 1 also did not contain, for example, the intersecting of rays feature of clause b). Nor was the feature elsewhere in the original claim set.

Thus, present claim 1 is not a mere combination of original claims but adds some, but not all, features from the description of the embodiment. This falls exactly into the above definition of an intermediate generalisation (see point 2.2), which according to established jurisprudence is only allowable under certain conditions. Were the appellant-applicant's logic to be followed, then an intermediate generalisation would always be allowable, since the original claim, being more general than the amended claim (with the addition of only some features from the embodiment), would be a blanket justification for not adding the remaining features of that embodiment. This approach would run contrary to the established practice of the Boards as set out above. The Board sees no

reason to deviate from this practice in the present case, nor has the appellant-applicant explained why they should.

2.3.10 The Board is also not convinced that the statement (page 4, lines 18 to 19) that using a single X-ray source and single X-ray detector is preferable justifies not specifying in the amended claim that both images are taken by the same X-ray source-pair. This statement relates to the invention as formulated in claim 1 as filed (see page 4, lines 9 to 16), not claim 1 as now amended, with its addition of only certain features of the specific embodiment. By the same token, the general statements (page 10, lines 1 to 3 and page 13, lines 14 to 18) to the effect that the invention is not limited to the described example, although consistent with the originally filed independent claims, shed no light on which features might be left out if only some features of the detailed embodiment were to be incorporated into an amended independent claim.

2.3.11 For all these reasons, the Board considers that claim 1 adds subject matter that extends beyond the application as filed.

2.4 First auxiliary request, claim 1

2.4.1 The claim is the same as for the main request but adds to clause b) the feature of "...calculating the position of a virtual x-ray source and detector for one scan by translating a reference point of one image to the reference point of another image..."

2.4.2 Although this addition is a further feature based on the particular embodiment (cf. application as filed,

page 12, lines 10 to 12), the resulting set of features remains an intermediate generalisation that adds subject matter beyond what was originally filed. For example, the claim defines a reference point in each image, but, as for the main request, not that the reference point is the meat rail in each image. By the same token, as already explained for the main request, other features of the embodiment, such as the first and second images being taken by the same X-ray source/linear-detector system, have also not been included in claim 1 as amended, resulting in added subject matter.

2.4.3 Thus, in the Board's view, claim 1 of the first auxiliary request adds subject matter extending beyond the application as filed for the same reasons as apply to the main request.

2.5 Third auxiliary request, claim 1

2.5.1 The claim is said to be based on claim 1 as originally filed. However, it is amended so that the method includes the step (clause a) of using a non-moving X-ray source and a non-moving X-ray detector to obtain a first X-ray image and in a subsequent step (clause c) introduces, in each case with the indefinite article, a non-moving X-ray source and a non-moving X-ray detector used to obtain a second X-ray image. Thus, using their normal reading skills, the skilled person understands from the syntax of clause c) that the X-ray source/linear detector system of clause c) is not the same as that of clause a), that would have required using the definite article "the" for both source and detector in clause c).

2.5.2 In summary, the Board agrees with the appellant-applicant in their interpreting the first three clauses

(a, b and c) of the claim as defining using a non-moving X-ray source/linear X-ray detector system to obtain a first X-ray image (clause a), moving the carcass to a different position (clause b) and then using a further non-moving X-ray source/linear X-ray detector system to obtain a second X-ray image.

2.5.3 However, contrary to the appellant-applicant's opinion, the Board considers that the application as filed does not disclose obtaining first and second X-ray images using different non-moving X-ray source/linear X-ray detector systems. Therefore, the Board finds that claim 1 contains added subject matter extending beyond the application as filed, the reasons being set out below (references are to the application as published).

2.5.4 A method of determining a cutting path that uses different X-ray source/detector systems, is not directly and unambiguously derivable from the original claim set.

There, a linear X-ray detector is first specified in claim 7, which depends on claim 2, according to which the X-ray source and detector are singular. Likewise, a method of producing a spatial image (claim 15) uses a linear X-ray detector according to claim 19, but from its claim dependency (claims 17 and 18), again a single X-ray source / single X-ray detector is disclosed here. Finally, original claim 23 to an imaging apparatus defines only one X-ray detector and X-ray source with the carcass moved there between to obtain two images (clause c). Therefore there is no direct and unambiguous disclosure of the first three clauses of present claim 1 in the original claim set.

- 2.5.5 Turning now to the original description and drawings, the only disclosure of X-ray imaging using two X-ray systems is a reference to prior art (see page 2, line 25 to page 3, line 22, in particular page 3, lines 12 to 13). However there the X-ray detector is not a linear detector, but an image intensifier (page 3, lines 14 to 18).
- 2.5.6 In a section headed "statements of the invention" (see page 4, lines 9 to 19, page 5, lines 1 and 2) a first statement that recites the words of original claim 1, states that X-ray images from different perspectives are preferably captured using a single X-ray source and a single X-ray detector and that the X-ray detector is preferably a linear detector. It is true that here the reference to the single X-ray source/detector system being "preferable" does not exclude there could be more than one such system. However, it is not a direct and unambiguous statement that there are first and second such systems, let alone that there the first of these takes a first image and the second a second image, nor, in that case, that the detector should be a linear X-ray detector as now claimed.
- 2.5.7 A further statement (see page 5, line 27 to page 6, line 12), starts with the words of original claim 23. An imaging apparatus for acquiring two images is disclosed, however only one X-ray source and only one X-ray detector is mentioned, whereby (page 6, lines 11 to 12), use of the definite article "the" emphasises the singularity of the X-ray source and the (preferably linear) detector.
- 2.5.8 By the same token (see page 8, lines 4 to 9), the statement that, in preferred embodiments the same X-ray system is used to acquire both images, whilst not

excluding that two such systems could be used, is not a direct and unambiguous disclosure thereof, since it leaves open how, if a single system is not to be used, the arrangement would be. Furthermore, the same passage refers to "the" detector in the singular when stating that it is preferably a linear detector, thus this is not a direct and unambiguous disclosure of two X-ray systems, each taking respective first and second images as claimed.

2.5.9 The description of the detailed embodiment (see page 10, line 5 to page 13 line 12 with figures 1 and 2) consistently discloses, and indeed emphasises, that the embodiment uses a single X-ray source 13 and single detector 6, with a single X-ray beam 5 there between. For example, the carcass passes through the X-ray beam to take a first image (page 10, lines 12 to 14), and "passes through the X-ray beam 5 for the second time" (page 10, lines 19 to 20), restated "the carcass passes ...through the "same X-ray beam 5" to enable taking the second image (page 10, lines 22 to 25), so that a "single" X-ray source/detector is all that is needed to obtain two X-ray images (page 11, lines 5 to 8). This central idea of only requiring a single X-ray system is repeated at the end of the detailed description (page 13, lines 8 to 12).

2.5.10 Likewise, in the Board's view, the closing statements of the description (page 13, lines 14 to 18, variations and modifications may be made to the invention as described and known equivalents used) does not provide a basis for claim 1. It may be that having two X-ray systems as now claimed might achieve an equivalent effect to the single X-ray system the application describes. However, the above sweeping reference to all conceivable variations, modifications and equivalents

is neither a direct nor an unambiguous disclosure of the specific method steps of present claim 1, with first and second images respectively obtained using the two X-ray source/detectors as claimed.

- 2.5.11 The Board concludes that there is no direct and unambiguous disclosure in the application as filed for the clauses a to c of claim 1 of the second auxiliary request (in summary, using a non-moving X-ray source / non-moving X-ray linear detector system for taking a first image and using a further such system for taking a second image). Therefore the claim adds subject matter extending beyond the application as filed.

2.6 Third auxiliary request, claim 1

Clauses a to c of this claim are the same as for the second auxiliary request, therefore for the same reasons as apply to that request (see above section 2.5), claim 1 of the third auxiliary request adds subject matter extending beyond the application as filed.

3. The Board concludes that, whether or not the claims of the various requests meet the requirements of Article 84 EPC (cf. impugned decision, grounds for the decision, points 1.1 to 1.10, 2.2, 3.1 to 3.5 and 4), since claim 1 according to all requests contains added subject matter, Article 123(2) EPC, all requests must fail. Therefore the Board can but dismiss the appeal.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar:

The Chairman:



G. Magouliotis

W. Van der Eijk

Decision electronically authenticated