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Datasheet for the decision of 12 July 2013

Case Number: T 2202/10 - 3.2.03

Application Number: 03708791.3

Publication Number: 1490582

IPC: E21B 44/00, G06T 7/60

Language of the proceedings: EN

Title of invention:
Method of localizing a hole drilled with a rock drilling machine

Patent Proprietor:
Atlas Copco Rock Drills AB

Opponent:
Sandvik Mining and Construction Oy

Headword:
-

Relevant legal provisions:
EPC Art. 100(c)

Keyword:
"Fresh ground introduced by opposition division: subject-matter extends beyond content of earlier application (no); novelty (yes); inventive step (yes)"

Decisions cited:
G 0009/91

Catchword:
-

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Beschwerdekammern | Boards of Appeal | Chambres de recours

Case Number: T 2202/10 - 3.2.03

D E C I S I O N
of the Technical Board of Appeal 3.2.03
of 12 July 2013

Appellant: (Patent Proprietor)
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Representative:
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Decision under appeal:
Interlocutory decision of the Opposition Division of the European Patent Office posted 23 August 2010 concerning maintenance of the European patent No. 1490582 in amended form.

Composition of the Board:

Chairman: U. Krause
Members: G. Ashley
K. Garnett

Summary of Facts and Submissions

I. European patent EP-B1-1 490 582 relates to a method and an arrangement for locating a hole drilled by a rock drilling machine. Grant of the patent was opposed on the grounds that its subject-matter lacked novelty and an inventive step (Article 100(a) EPC). An objection under Article 100(c) EPC was raised by the opponent after the nine month opposition period had expired; the opposition division considered this ground to be relevant and admitted it into the proceedings.

II. The opposition division concluded that the patent could be maintained on the basis of the claims filed during the oral proceedings as the fourth auxiliary request. The decision was posted on 23 August 2010.

III. The above decision was appealed by the patent proprietor (hereafter the appellant), which filed notice of appeal on 2 November 2010, paying the appeal fee on the same day. A statement containing the grounds of appeal was filed on 3 January 2011.

IV. In accordance with Article 15(1) of the Rules of Procedure of the Boards of Appeal, the board issued a preliminary opinion of the case together with a summons to attend oral proceedings.

In response the appellant filed new sets of claims as its main and auxiliary requests, in view of which the respondent (hereafter the opponent) stated in its letter of 13 June 2013 that it would not attend the oral proceedings.

The oral proceedings were then cancelled.

V. Requests

The appellant requested that the above decision be set aside and the patent be maintained on the basis of the claims of the main request or the auxiliary request, filed with the letter of 10 May 2013, and the amended description filed with the letter of 27 June 2013.

The respondent requested that the appeal be dismissed.

VI. Claims

(a) The claims of the main request read as follows:

"1. "Method of localizing a hole (11) drilled with a rock drilling machine comprising positioning a boom (3) arranged on a rock drilling rig near the drilled hole with the aid of a positioning system arranged on the rock drilling rig,
characterized in that
a digital picture is created by means of a camera (5) arranged on the boom (3),
that a distance between the boom (3) and the drilled hole (11) is measured by means of a distance meter (6),
that the digital picture is stored in a computer (2),
that the stored picture is transformed to a picture containing only black and white parts,
that the picture with only black and white parts is scanned to find a black part with a size interval corresponding to the drilled hole

and that the position of the drill hole mouth in the room is determined with the aid of the position of the black part and the measured distance."

"2. A rock drilling rig comprising:
a carrier (1) having one or two booms (3, 4);
a computer (2);
a digital camera (5) and a distance meter (6) arranged on one of said one or two booms (3, 4), said digital camera and distance meter being connected to the computer (2);
a rock drilling machine arranged on one of said one or two booms (3, 4), and a positioning system for positioning said one or two booms;

said rock drilling rig being arranged to:
localize a hole (11) drilled with said rock drilling machine by positioning one of said booms (3) near the drilled hole with the aid of said positioning system;
create a digital picture by means of said camera (5);
measure a distance between said boom (3) and said drilled hole by means of said distance meter (6);
store said digital picture in said computer (2);
transform said stored picture into a picture containing only black and white parts;
scan said picture with only black and white parts to find a black part with a size within a size interval corresponding to the drilled hole, and
determine the position of the drill hole mouth in the room with the aid of the position of the black part and the measured distance."

(b) The patent was granted with the following claim 2:

"2. Arrangement for localizing a hole (11) drilled with a rock drilling machine, said arrangement comprising a positioning system for positioning a boom (3) arranged on a rock drilling rig near the drilled hole,
characterized in that the arrangement further comprises
- a camera (5) arranged on the boom (3) and adapted to create a digital picture,
- a distance meter (6) adapted to measure a distance between the boom (3) and the drilled hole (11),
- means for storing the digital picture in a computer (2),
- means for transforming the stored picture to a picture containing only black and white parts,
- means for scanning the picture with only black and white parts to find a black part with a size within a size interval corresponding to the drilled hole, and
- means for determining the position of the drill hole mouth in the room with the aid of the position of the black part and the measured distance."

VII. Submissions of the Parties

(a) Article 100(c) EPC

The application as originally filed (WO-A-03/085233) contained only one claim, which was directed to a method for localising a holed drilled with a rock drilling machine.

The respondent submitted that the original application only concerned a method for localising a drilled hole.

Addition of an apparatus claim (claim 2 of the granted patent and of the present main request) leads to an inadmissible generalisation of the originally disclosed invention, since the claim covers devices suitable for carrying out methods other than the one disclosed in the original application.

The view of the appellant was that that the ground of added subject-matter should not have been admitted into the proceedings, as it had been filed late and was not *prima facie* relevant (see the statement setting out the grounds of appeal).

Claim 2 of the main request is nevertheless directed to a rock drilling rig comprising features, all of which are disclosed in the original application. Although the drilling rig shown in Figure 1 of the application has two booms and claim 2 includes a drilling rig have just one boom, the application states that "One can also have rock drilling machine, digital camera and distance meter on the same boom"; thus a rock drilling rig having only one boom is also disclosed.

(b) Article 84 EPC

Granted claim 2 defines "means for" carrying out a number of functions, whereas claim 2 of the main request requires that the rock drilling rig be "arranged to" perform these functions. The respondent submitted that it is not clear how this can be achieved. The appellant argued that a lack of clarity cannot arise merely from stipulating that the rig is arranged to perform a function, rather than being capable of performing a function.

(c) Novelty and Inventive Step

The respondent alleged that the subject-matter of claim 2 lacks novelty and/or inventive step over D2:

D2: P. Corke et al., "Vision-Based Control for Mining Automation", IEEE Robotics & Automation Magazine, pages 44 to 49, December 1998.

The appellant and the opposition division were of the view that D2 does not disclose, firstly, a rock drilling rig arranged to measure a distance between the boom and the drilled hole by means of a distance meter, and secondly, one arranged to determine the position of the drill hole mouth with the aid of both the position of the black part of the picture and the measured distance.

The respondent argued that D2 discloses a drilling rig having all the apparatus features defined in claim 2. In particular, it describes a distance meter suitable for measuring the distance between the boom and a drilled hole. In addition "Datacube hardware" working at 10 Hz is disclosed, which means that the apparatus of D2 is capable of determining the position of the drill hole mouth with the aid of the position of the black part and the measured distance.

Reasons for the Decision

1. The appeal is admissible.

2. Statement of Non-Attendance at Oral Proceedings

The respondent stated in its letter of 13 June 2013 that it would not attend the oral proceedings, and hence is deemed to rely only on its written submissions (Article 15(3) RPBA).

3. Articles 100(c) and 123 EPC

3.1 The application as originally filed contained a sole claim defining a method for localising a hole. However, the granted patent also claimed an arrangement for localising a hole (claim 2). During the opposition proceedings the respondent (then opponent) objected to claim 2 under Article 100(c) EPC. Although this ground was raised after the nine month period for giving notice of opposition (Article 99(1) EPC), the opposition division saw fit to admit the ground into the proceedings and concluded that claim 2 of the granted patent had been added contrary to Article 123(2) EPC.

3.2 In the statement setting out the grounds of appeal, the appellant challenged the admissibility of the ground of added subject-matter, as it had been filed late and was not *prima facie* relevant. Article 114(1) EPC allows the opposition division to consider late-filed grounds for opposition which *prima facie* seem to prejudice the maintenance of the patent (G 9/91). The fact that claim 2 was found not to meet the requirements of

Article 123(2) EPC indicates that the ground was sufficiently relevant for it to have been admitted into the proceedings, and that the opposition division had exercised its discretion correctly.

3.3 The respondent argued that the application as originally filed only claimed a method for localising a hole, hence the introduction of an apparatus claim leads to an extension of subject-matter contrary to Article 123(2) EPC. However, the point here is, as always, whether or not the claimed subject-matter, ie the rock drilling rig of claim 2 of the main request, is directly and unambiguously derivable from the application as originally filed.

3.4 The application discloses (Figure 1 and paragraph bridging pages 1 and 2) a rock drilling rig comprising:

- a carrier having two booms,
- a computer,
- a digital camera and a distance meter connected to the computer, and
- a rock drilling machine arranged on one of the booms.

The application explains (second paragraph on page 2) that these components are arranged in particular way, namely to localise a hole drilled by the rock drilling machine by *inter alia*, creating a digital picture which is transformed into a picture containing only black and white parts, measuring the distance between a boom and the drilled hole, and determining the position of the hole on the basis of the processing picture and the measured distance.

Consequently, a rock drilling rig having the above components arranged to perform the given functions is disclosed in the original application.

Claim 2 also defines the rock drilling rig as having one or two booms. Whereas a rig having two booms is clearly disclosed in Figure 1 of the application, a rig having only one boom is not explicitly mentioned. However, the application states (page 2, lines 4 to 5) that one can also have rock drilling machine, digital camera and distance meter on the same boom. The board agrees with the appellant's submission that a skilled person reading that all of these components are mounted on one boom would understand this to mean that there is just one boom.

3.5 The opposition division and the respondent argued that granted claim 2 concerned an "arrangement" comprising various "means for" carrying out these functions, and that such terminology resulted in the definition of subject-matter that was broader in scope than the disclosure of the application. However, rather than an "arrangement", claim 2 of the main request defines a rock drilling rig having specific components that are arranged to carry out the required functions, and hence does not extend beyond the scope of the original disclosure.

3.6 Regarding Article 123(3) EPC, as mentioned above, claim 2 of the main request relates to a rock drilling rig comprising specific components, whereas granted claim 2 defines more broadly "an arrangement" comprising various "means". The scope of protection

conferred by the granted patent has not been extended by the amendments.

3.7 Claim 2 of the main request meets the requirements of Article 123(2) and (3) EPC.

4. Article 84 EPC

The respondent submitted that it is not clear how the rock drilling rig should be arranged in order to carry out the various functions. The board is of the opinion that the skilled person would be aware of suitable software and control mechanisms that would achieve the required effects.

5. Novelty and Inventive Step (Articles 54 and 56 EPC)

5.1 The respondent submits that the subject-matter of claim 2 lacks novelty and an inventive step over D2.

D2 is an article discussing the application of robotics and automation in the mining industry, and describes locating a hole drilled by a rock drilling machine (page 46, right-hand column, section title "Underground Mining Robotics"). The article refers to a rock drilling rig having a manipulator arm or boom, to which a camera is fitted (bottom of the left-hand column on page 47). It is however disputed that D2 discloses a rock drilling rig arranged to perform the following functions:

– to measure a distance between the boom and the drilled hole by means of a distance meter; and

– to determine the position of the drill hole mouth with the aid of the position of the black part (of the transformed digital picture) and the measured distance.

5.2 Distance Meter

Under point 2 on page 47 of D2 (towards the bottom of the left-hand column) it is said that range can be determined by any one of a number of techniques including stadimetry, stereo, infrared or ultrasonic distance measuring. It is therefore clear that a distance meter is disclosed. The opposition division was of the view (see the decision, page 10 "Step d") that it is not clear in D2 which range is being referred to. For example, if the hole is not directly in front of the camera, the range could refer to either the distance between the camera (or the boom) and the wall, or to that between the camera and the hole. However, the arguments presented by the opposition division were made in the context of discussing the method of claim 1 rather than an apparatus claim, hence the opposition division was not considering the disclosure of a distance meter *per se*. The board therefore agrees with the respondent that D2 discloses a drilling rig having a distance meter suitable for measuring the distance from the boom to the hole.

5.3 Determining the Position of the Drilled Hole

The opposition division held (see its decision page 9, "Step a)" and page 14, last paragraph) that the approaches taken in D2 and the patent are fundamentally

different, and the board has no reason to depart from this view.

According to the disputed invention, a hole is drilled and its location is established from a photograph and the measured distance. The recorded location of the hole can be subsequently used for operations, such as inserting a rock bolt (column 2, lines 19 to 21).

On the other hand, in D2 the position of a drilled hole in a wall is unknown, not having been recorded. The task is to locate the hole, and this is achieved by analysing a photograph of the wall (paragraph bridging pages 47 and 48). Although the measurement of a range is mentioned, there is no explanation of exactly what is being measured and how the measurement is used. It cannot be clearly derived from D2 that the drilling rig is arranged to determine the position of the hole on the basis of both the photograph and the measured distance between the boom and the hole.

The respondent argued that by having a distance meter and a computer, D2 discloses the apparatus features capable of determining the hole as defined in claim 2. However, merely having a computer is insufficient; it has to be arranged, eg programmed, in a particular way so that the analysis of the picture and the distance can be taken into account, hence this analysis is also a feature of the drilling rig.

5.4 Consequently the subject-matter of claim 2 is novel.

5.5 The opposition division considered that the purpose of D2 is to report on a project without going into

extensive detail as to how the objectives were achieved. The skilled person is therefore faced with the problem of developing the practical implementation of the ideas put forward in D2. Given that there is no indication in D2 of a rock drilling rig, as defined in claim 2, the board concluded that the subject-matter of the claim has an inventive step.

6. Other Issues

The board considers the claims of the appellant's main request to be allowable. Therefore there is no need to consider the claims of the auxiliary request, and no reason to hold oral proceedings.

The description (see pages filed with the letter of 27 June 2013) now mentions the relevant document D2 and has been brought into conformity with the claims. The amendments have been carried out without adding any new matter.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. The case is remitted to the opposition division with the order to maintain the patent on the basis of the following documents:

   Claims: 1 and 2 submitted as the main request with the letter of 10 May 2013;

   Description: amended page 2 of the published specification, filed with the letter of 27 June 2013;

   Figures: Figures 1 to 5, as granted.

The Registrar: The Chairman:

C. Spira U. Krause