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D E C I S I O N
of 18 May 2000

Case Number: T 0823/98 - 3.2.6

Application Number: 94907805.9

Publication Number: 0634965

IPC: B25B 23/144

Language of the proceedings: EN

Title of invention:
Socket for turning a threaded connector by power tool

Applicant:
Junkers, John K.

Opponent:
-

Headword:
-

Relevant legal provisions:
EPC Art. 54, 56

Keyword:
"Novelty (yes)"
"Inventive step (yes)"

Decisions cited:
-

Catchword:
-

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Beschwerdekammern | Boards of Appeal | Chambres de recours

Case Number: T 0823/98 - 3.2.6

D E C I S I O N
of the Technical Board of Appeal 3.2.6
of 18 May 2000

Appellant: Junkers, John K.
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Decision under appeal: **Decision of the Examining Division of the European Patent Office posted 14 April 1998 refusing European patent application No. 94 907 805.9 pursuant to Article 97(1) EPC.**

Composition of the Board:

Chairman: P. Alting van Geusau
Members: H. Meinders
M. J. Vogel

Summary of Facts and Submissions

I. European patent application No. 94 907 805.9 published as a PCT application under No. WO 94/16863 was refused by the Examining Division by decision posted 14 April 1998.

II. The reason given for the refusal was that the subject-matter of claim 1 filed with letter of 20 January 1998 did not involve an inventive step over the teaching disclosed in:

D1: EP-A-0 232 606

The Examining Division considered that the subject-matter of claim 1 differed from the prior art disclosed in D1 mainly in that the torque transducer and the socket were provided as one single part, with the strain measuring means now being arranged in the socket body. The skilled person would, however, always be looking for ways to reduce the number of parts involved by combining the constituting parts into a single part.

III. On 12 June 1998 the Appellant (applicant) lodged an appeal against this decision and paid the prescribed appeal fee. On 17 August 1998 a statement of grounds of appeal was filed.

In essence, the Appellant's arguments in support of the appeal were as follows:

Some of the features the Examining Division erroneously derived from D1 were in fact features of the invention clearly distinguishing it from this prior art.

Moreover, the invention was not related to an alternative combination of a torque transducer and a socket as two separate entities axially spaced from each other, but to one entity, namely a socket, in which strain measuring means were located.

The socket according to the invention led to distinct advantages over the assembly disclosed in D1, the claimed arrangement avoided the measuring errors encountered therein. These resulted from the fact that there was a separate torque transducer and a socket between the point of application of the torque (the power tool) and the point of receipt of the torque (the threaded connector).

IV. In a communication the Board raised objections of lack of clarity (Article 84 EPC) and extension of subject-matter (Article 123(2) EPC). The Board noted that if amended claims were to be filed they should be drafted in the correct two-part form pursuant to Rule 29(1) EPC to take account of the prior art disclosed in:

D2: DE-A-3 150 383,

a document known to the Board.

V. By letter of 9 March 2000 the applicant filed amended application documents. In a telephone call with the Rapporteur on 13 April 2000 further amendments were agreed upon. Accordingly, the Appellant requested setting aside the decision under appeal and grant of a patent with the following application documents:

Claims: 1 to 5(part) as filed with letter of 9 March 2000 and amended as agreed by

telephone on 13 April 2000,
5(part) to 8 as filed with letter of 22 May 1997,

Description: pages 1, 2 as filed with letter of 9 March 2000,
pages 3,4 as originally filed,
page 5 as originally filed and amended as agreed by telephone on 13 April 2000,

Drawings: Sheet 1/1 as originally filed.

VI. Claim 1 reads as follows:

"A socket for turning a threaded connector by means of a power tool, comprising a socket body (1) having an axis (2), connecting means (3) at one axial end of the socket body (1) for connecting the latter to a power tool, engaging means (4) in said socket body (1) at the opposite axial end thereof for engaging with a threaded connector, and strain measuring means (5), whereby in use torque, applied by a power tool, is transferred via the socket body (1) to a threaded connector engaged by the engaging means (4), characterised in that the socket body (1) is constructed so as to transfer torque applied by a power tool connected to the connecting means (3) directly to a threaded connector engaged by the engaging means (4), and in that the strain measuring means (5) is arranged in said socket body (1) between the connecting means (3) and the engaging means (4) in a position such that in use, when a power tool is connected to the connecting means (3), the engaging means (4) engages a threaded connector and the power tool turns the socket body (1) and therefore the threaded connector, the strain measuring means (5)

measures the strain in the socket body, and thus provides a measure of the torque applied by the power tool to the socket body and therefore to the threaded connector."

Reasons for the Decision

1. The appeal is admissible.

2. *Amendments (Article 123(2) EPC)*

2.1 The amendments in claim 1 are derivable from the following parts of the application documents as originally filed:

- connecting means and engaging means at two opposite ends of the socket body, the latter having an axis: page 3, lines 17 to 22,

- socket body constructed to transfer torque directly from a power tool connected to the connecting means to a threaded connector engaged by the engaging means: page 3, line 33 to page 4, line 6,
- strain measuring means arranged in the socket body between engaging means and connecting means: page 3, lines 24 to 26 and Figure 1,

- strain measuring means measures the strain in the socket body, thus providing a measure of the torque applied by the power tool via the socket body to the threaded connector: page 4, lines 6 to 8 and line 24.

2.2 The amendments in the dependent claims merely concern a more concise and clarified rewording of their subject-matter as originally filed. The amendments to the description concern the adaptation to the amended main claim and the mention of the closest prior art, D2.

3. *Novelty (Article 54 EPC)*

The subject-matter of claim 1 is distinguished from the prior art revealed by the (supplementary and international) search reports already by the feature of the strain measuring means being arranged **in** the socket body.

Thus the subject-matter of claim 1 is novel.

4. *Closest prior art*

The Board considers D2 to be the closest prior art for the discussion of inventive step of the subject-matter of claim 1. The pre-characterising portion of claim 1 is based on the disclosure of this document.

D2 discloses an arrangement with which the torque applied by a power tool via a socket to a threaded connector can be measured by means disposed axially outside of the socket between the point where the power tool is applied and the socket. The arrangement has a reduced overall height and only one interface at which play between the power tool, connecting means, torque transducer and socket can influence the torque measurement. It involves only a few extra parts other than the socket.

In this respect D2 is closer prior art than D1 relied

upon by the Examining Division, as the assembly of D1 involves a larger number of parts and a significant overall height and has the additional disadvantage of measuring errors due to misalignment of the power tool, connecting means, torque measuring means and socket.

5. *Inventive step (Article 56 EPC)*

5.1 Claim 1 is distinguished from the disclosure of D2 by its characterising features:

- the socket body being constructed so as to transfer torque applied by a power tool connected to the connecting means directly to a threaded connector engaged by the engaging means,

- the strain measuring means being arranged in said socket body between the connecting means and the engaging means in a position such that in use, when a power tool is connected to the connecting means, the engaging means engages a threaded connector and the power tool turns the socket body and therefore the threaded connector, the strain measuring means measures the strain in the socket body, and thus provides a measure of the torque applied by the power tool to the socket body and therefore to the threaded connector.

These features have the effect that the operating height of the assembly is further reduced, a smaller number of parts is involved, and external influences on the measurement of the torque have less effect. This solves the problems involved when having to operate the socket in confined spaces and improves the accuracy of the torque reading. A reduction of costs may also

result.

5.2 None of the available documents reveal these distinguishing features nor do they provide hints or suggestions to do away with the intermediate parts between the application point of the torque by the power tool and the socket body, or to incorporate the strain measuring means into the socket body:

WO-A-8 809 543 concerns a torque selector for use between a power tool and a socket in which torsion induced by the power tool brings a first contact of which the position can be adjusted depending on the torque to be applied towards a second contact in fixed relation with respect to the socket, so that a signal is given, by contact between the first and second contact, that the required torque has been achieved.

US-A-4 709 182 relates to an apparatus for tightening or loosening screw-type connections by stimulating the screw-bolt to oscillate longitudinally with a piezoelectric vibrator, arranged in the socket body. The oscillation is sensed by the vibrator itself or, if possible, by sensors attached to the screw shaft.

US-A-5 123 313 relates to a torsion socket with visual markings on its outside to indicate that the nut is no longer turning, the required torque being applied by a power tool.

US-A-4 759 225 relates to a torque transducer incorporated in the power tool, not in the socket body.

Thus the subject-matter of claim 1 is considered to involve an inventive step as well.

5.3 Even if one were to start from D1 as closest prior art, as the Examining Division has done, the result would not be different.

5.3.1 According to the Examining Division it is generally known to the skilled man that in modular devices comprising constituting parts serving distinct functions, combining the constituting parts into a single part, apart from obvious advantages such as reducing the number of parts, also brought disadvantages such as a loss of flexibility because the strain measuring means are now fixed to a particular socket and cannot be used with different types or sizes of sockets. Therefore it was obvious to the skilled person to achieve these effects by providing the torque transducer and the socket as a single part.

5.3.2 In its decision the Examining Division has given no reasons why the advantages achieved by combining two parts into one outweigh the disadvantages consisting of a loss of flexibility and thus has only made clear that the skilled person **could** arrive at the subject-matter of claim 1, but not why he **would** do so.

5.3.3 According to consistent case law of the Boards of Appeal the question to be answered when assessing inventive step is not whether the skilled person could have arrived at the invention by modifying the prior art, but rather whether, in expectation of the advantages actually achieved (ie. in the light of the technical problem addressed), he would have done so because of prompting by the prior art.

5.3.4 As already shown above, none of the prior art documents on file prompts the skilled person to introduce the

strain measurement into the socket body. When related to strain or torque measurement, all available prior art hints at keeping the measurement separate from the socket body.

6. *Dependent claims*

The dependent claims 2 to 8, defining preferred embodiments of the subject-matter of claim 1 (Rule 29(3) EPC), also fulfil the requirements regarding novelty and 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:

Claims: 1 to 5(part) as filed with letter of 9 March 2000 and amended as agreed by telephone on 13 April 2000,
5(part) to 8 as filed with letter of 22 May 1997,

Description: pages 1, 2 as filed with letter of 9 March 2000,
pages 3,4 as originally filed,
page 5 as originally filed and amended as agreed by telephone on 13 April 2000,

Drawings: Sheet 1/1 as originally filed.

The Registrar: The Chairman:

M. Patin P. Alting van Geusau