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D E C I S I O N
of 10 October 2002

Case Number: T 0007/00 - 3.2.6

Application Number: 93830304.7

Publication Number: 0581744

IPC: D05B 11/00

Language of the proceedings: EN

Title of invention:
A multi-needle quilting machine provided with a thread cutter

Patentee:
MECA S.p.A.

Opponent:
Nähmaschinenfabrik Emil Stutznäcker GmbH & Co. KG

Headword:
-

Relevant legal provisions:
EPC Art. 56

Keyword:
"Inventive step (yes)"

Decisions cited:
-

Catchword:
-

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Beschwerdekammern | Boards of Appeal | Chambres de recours

Case Number: T 0007/00 - 3.2.6

D E C I S I O N
of the Technical Board of Appeal 3.2.6
of 10 October 2002

Appellant: (Opponent)
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Decision under appeal: **Decision of the Opposition Division of the European Patent Office posted 3 November 1999 rejecting the opposition filed against European patent No. 0 581 744 pursuant to Article 102(2) EPC.**

Composition of the Board:

Chairman: P. Alting van Geusau
Members: G. Pricolo
M.-B. Tardo-Dino

Summary of Facts and Submissions

I. The appeal is from the decision of the Opposition Division posted on 3 November 1999 to reject the opposition against European patent No. 0 581 744 granted in respect of European patent application No. 93 830 304.7.

Granted claim 1 reads as follows:

"1. An electronically controlled multi-needle quilting machine including link means arranged between an eccentric (4) mounted on a rotating spindle (2) and a lever (7) for actuating, by an oscillating motion, a number of loopers (10, 10',10") which, in combination with respective needles (13,13',13") perform stitching operations by double chain stitches with yarns (16,16',16") on a fabric (14) interposed between said loopers and needles, characterized in that said link means comprises a pneumatic cylinder (5), with a piston rod (6) driven to vary the rod extension, and said loopers (10,10',10") are each provided with a blade(15)."

II. The Opposition Division held that the subject-matter of claim 1 involved an inventive step having regard to the disclosures of documents on file, in particular

D18: DE-C-3 116 931,

which represented the closest prior art, and

D6: US-A-3 618 543,

D8: DE-C-2 325 564,

D12: DE-U-79 12 758,
which were again referred to by the appellant (opponent) in the appeal proceedings.

III. The appellant lodged an appeal, received at the EPO on 24 December 1999, against this decision. The appeal fee was paid simultaneously with the filing of the appeal. In the statement setting out the grounds of appeal, received at the EPO on 2 March 2000, the appellant referred to a further document

D18': US-A-4 461 229,

which was the US patent corresponding to the German patent publication D18.

IV. Oral proceedings took place on 10 October 2002.

The appellant requested that the decision under appeal be set aside and that the patent be revoked.

As previously announced by letter dated 23 July 2002, the respondent (patentee) did not attend the oral proceedings. The proceedings were continued without him (Rule 71(2) EPC). In his written submissions, the respondent requested that the appeal be dismissed and that the patent be maintained as granted or in amended form according to the auxiliary request filed with letter dated 4 July 2000.

V. In support of its requests the appellant relied essentially on the following submissions:

Document D18 represented the closest prior art and disclosed a multi-needle quilting machine comprising a

number of loopers which, in combination with respective needles, performed stitching operations by double chain stitches with yarns on a fabric interposed between said loopers and needles. In the introductory portion, D18 referred to a prior art patent publication describing a quilting machine which was electrically controlled. Since this prior art was described as the starting point for the invention of D18, also the quilting machine according to D18 comprised the feature of being electrically controlled. Anyway, the provision of an electronic control was a matter of normal design procedure. Furthermore, it was clear for the skilled person that for actuating the loopers by an oscillating motion a mechanism comprising an eccentric and a lever had to be used. In any case, such mechanism was generally known in the art.

According to the teaching of D18, which was best understood by reference to Figure 4 of D18', the fabric was displaced in order to bring the needle threads against cutting blades provided on the loopers, where they were cut off. The skilled person would recognize that the displacement of the fabric, in particular of those fabrics having large surfaces, was disadvantageous in view of the great mass which was moved. This could have as a consequence that the thread was not cut. In order to overcome this inconvenience, the skilled person would obviously consider repositioning the cutting blade rather than the fabric towards the thread to cut it off. For doing this the skilled person would provide, in the machine of D18, two modes of oscillation of the loopers: a first mode for carrying out the stitching operations, and a second mode for carrying out the cutting operation. Hence, the skilled person would look in the prior art for a

mechanism suitable for providing different modes of oscillation of the loopers and would find such mechanism in D6. D6 referred explicitly to a hydraulic mechanism and therefore suggested the provision of a pneumatic mechanism which, as generally known, was a well known equivalent of a hydraulic mechanism and comprised a pneumatic cylinder. In this manner the skilled person would directly arrive at the subject-matter of claim 1.

The subject-matter of claim 1 was moreover rendered obvious by the combination of the quilting machine of D18' with the teaching of D8 to provide driving means for driving a cutting knife provided on a looper against the thread at the end of a sewing operation, and with the teaching of D12 to provide a pneumatic drive for actuating a cutting device of a sewing machine.

VI. The respondent argued essentially as follows:

In the multi-needle quilting machine according to the patent in suit a needle yarn and a looper yarn were provided for performing stitching operations by double chain stitches. In contrast thereto, document D8 was directed to a single-chain stitch sewing machine with only one needle and one yarn, and the looper of this sewing machine was of a different kind due to the absence of a looper yarn adapted to cooperate therewith. Furthermore, the combination of three different citations, namely D18, D8, D12, could only serve to reconstruct the claim "a-posteriori", since the teachings of these documents were not concurrently directed to the same objective.

Reasons for the Decision

1. The appeal is admissible.

2. *Novelty*

Since novelty was not disputed in opposition and appeal proceedings, it is not necessary to enter into discussion on this point.

3. *Inventive step*

3.1 The objective underlying the patent in suit consists in providing a multi-needle quilting machine adapted to produce an array of closed pattern designs which are completely isolated from each other already at the end of an automatic manufacturing operation.

3.2 Document D18 represents the closest prior art because it discloses a machine which aims at the same objective (see D18, page 3, lines 28 to 32) and has the most technical features in common with the claimed invention.

The Board notes that the technical disclosure of D18' is essentially equivalent to that of D18, and that D18' could equally be taken as the closest prior art. D18' merely complements the disclosure of D18 by the introduction of Figures 4 and 5. Figure 4 is particularly relevant since it clearly shows how a needle thread loop is cut. However, the information given by Figure 4 of D18' is also directly derivable from the text of D18 (see in particular the paragraph bridging pages 9 and 10).

Using the wording of claim 1, D18 discloses a multi-needle quilting machine (it is clearly a sewing machine which is suitable for quilting) including means for actuating, by an oscillating motion (column 3, lines 45 to 47), a number of loopers (7) which, in combination with respective needles (4) perform stitching operations by double chain stitches (column 3, lines 41 to 44) with yarns (NF) on a fabric interposed between said loopers (7) and needles (4), said loopers being each provided with a blade (9); see column 3, lines 47 to 50).

3.3 The above mentioned technical problem is solved, in accordance with the definition of claim 1, by the following features:

(i) the machine is electronically controlled,

(ii) the actuating means consists of link means arranged between an eccentric mounted on a rotating spindle and a lever, and

(iii) the link means comprises a pneumatic cylinder with a piston rod driven to vary the rod extension.

As regards feature (i), the Board cannot follow the argument of the appellant that the reference in D18 to a prior art patent publication describing an electrically controlled quilting machine was a direct disclosure of an electronically controlled quilting machine, because an electrical control is not necessarily an electronic control. Indeed, an electrical control may be carried out by means of electromechanical means only, in the absence of any electronic components.

Concerning feature (ii), the Board notes that D18 does not give any details about the actuating means. Since known mechanisms exist for providing an oscillating motion that do not include an eccentric, eg. because instead they comprise a crank, it must be concluded that feature (ii) is also not disclosed by D18.

Feature (iii) is undisputedly not disclosed by document D18. In the Board's judgment, feature (iii) clearly and unambiguously restricts the claimed subject-matter to the provision of a pneumatic cylinder in said link means. It is true that in the description of the patent in suit (see column 3, lines 43 to 48) it is stated that the "pneumatic cylinder may be replaced by any known device...". However, since in the present case the claim refers to a specific device and the wording of the claim leaves no doubt as to what device is intended, an interpretation of the term "pneumatic cylinder" based on the mentioned passage of the description so as to comprise other devices is not justified.

3.4 Compared to the claimed subject-matter, document D6 discloses a multi-needle tufting machine (column 2, line 16) including link means (58, 60, 62, 64) arranged between an eccentric (54) mounted on a rotating spindle (52) and a lever (46) for actuating, by an oscillating motion, a number of loopers (36; see column 2, lines 43 to 59) which, in combination with respective needles perform tufting operations (ie formation of loops) on a fabric (F) interposed between said loopers and needles.

The length of the loops formed during the tufting operations can be varied by means of at least two

selectively operable looper drive mechanisms (66, 68, 70, 72, 74, 76, 78 ...110) provided for regulating the stroke of the looper in a direction parallel to the needle stroke, which drive mechanisms cooperate with the looper (36) by means of a link (112; see column 2, lines 60 to column 3, line 28). These drive mechanisms for regulating the stroke of the looper are distinct and separated from the means (46, 52, 54, 58, 60, 62, 64) for actuating, by an oscillating motion, the loopers (36). Therefore, the disclosure of D6 might suggest to the skilled person to provide, in the machine of D18, drive mechanisms which are separate from the mechanism for oscillating the loopers, in order to vary the stroke of the looper in the machine of D18. This, however, would be in contrast with the teaching of claim 1 of the patent in suit, according to which the mechanism for varying the mode of oscillation of the loopers, namely the pneumatic cylinder with its piston rod, is provided in the mechanism for oscillating the loopers, which comprises the link means arranged between the eccentric and the lever for actuating the loopers. Therefore, even if the skilled person would combine the teachings of documents D18 and D6, he would not arrive at the subject-matter of claim 1.

3.5 Document D8 discloses (see Figures 2 and 5) a chain stitch sewing machine including a rotating chain stitch looper (31), for cooperating with a needle (8). On the shaft-facing surface (35) of the looper (31), a cutting knife (36) is fastened, whose cutter (37) is arranged above the looper back (33; see column 4, lines 7 to 12). The reverse rotation of a main shaft (29) at the end of a stopping operation is utilized for severing the needle thread loop; indeed by such reverse

rotation the cutter (37) is driven against the thread loop (column 6, lines 13 to 15, column 7, line 11 to column 8, line 5). Therefore, since D8 uses the reverse rotation of the looper for cutting the thread, it cannot suggest the provision, for the same purpose, of a mechanism which varies the mode of oscillation of the looper.

3.6 Document D12 discloses (Figure 1) a sewing machine with a thread-cutting device. The machine is arranged to activate the thread-cutting device at the end of a seam, after the machine has stopped in the upper dead centre position of the needle (3). In such position, a piston rod (17) is moved, whereby a thread catcher (7) is swung into the thread loop seized by a looper (6). Thereafter the piston rod (17) is moved back, whereby the thread catcher (7) is pivoted against a cutting knife (8) which then severs the threads held by the thread catcher (7; see page 5, 2nd paragraph to page 6, 1st paragraph). Therefore, in the machine of D12 the piston rod with its associated cylinder does not serve, as in the machine according to claim 1 of the patent in suit, to vary the mode of oscillation of the looper. It follows also that D12 cannot suggest the claimed combination of features.

3.7 The remaining available prior art does not suggest the teaching of claim 1 of the patent in suit to cut the yarns by using the same mechanism that oscillates the loopers during stitching operations simply by varying the extent of oscillation thereof by means of a pneumatic cylinder with a piston rod driven to vary the rod extension.

It follows that the subject-matter of claim 1, and of

dependent claim 2, is found to involve an inventive step.

3.8 Since the patent as granted does not give rise to the objections under Article 100 EPC submitted by the appellant, the Board has no further jurisdiction permitting consideration of deletion of the passage in column 3, lines 43 to 48, of the patent in suit, as being inconsistent with the claimed subject-matter.

4. Since the main request of the respondent is allowable, the auxiliary request need not be considered.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar: The Chairman:

M. Patin P. Alting van Geusau