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**Datasheet for the decision
of 16 october 2007**

Case Number: T 1250/06 - 3.2.06

Application Number: 00911198.0

Publication Number: 1171377

IPC: B68G 9/00

Language of the proceedings: EN

Title of invention:

Method and system for forming strings of pocketed coil springs

Patentee:

Spühl AG St. Gallen

Opponent:

ET Eurotech (Cyprus) Ltd.

Headword:

-

Relevant legal provisions:

EPC Art. 123(2), 123(3), 54(2), 56

Keyword:

"Amendments - added subject matter (yes) - main request"
"Amendments - broadening scope of protection (no) - first
auxiliary request"
"Novelty (yes)"
"Inventive step (yes)"

Decisions cited:

-

Catchword:

-



Case Number: T 1250/06 - 3.2.06

DECISION
of the Technical Board of Appeal 3.2.06
of 16 October 2007

Appellant I: Spühl AG St. Gallen
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Decision under appeal: Interlocutory decision of the Opposition
Division of the European Patent Office posted
19 June 2006 concerning maintenance of European
patent No. 1171377 in amended form.

Composition of the Board:

Chairman: P. Alting Van Geusau
Members: G. Pricolo
R. Menapace

Summary of Facts and Submissions

- I. The appeals stem from the interlocutory decision of the Opposition Division posted on 19 June 2006 maintaining European patent No. 1 171 377 in amended form in accordance with the patent proprietor's second auxiliary request filed on 3 April 2006.
- II. In the decision under appeal the Opposition Division considered that the patent proprietor's main request (maintenance of the patent as granted) was not allowable (Article 100(c) EPC) because: *"the expression "...the plies being joined at the opposite edges to the free edges..." in claims 1 and 17 and the expression "...the plies being joined at the edges opposite the free edges..." in claim 28 embody realisations of the two generally parallel plies fabric structure which have not been disclosed in the original filed application. In particular such expressions also embody two separate fabric plies having been joined by joining means like seaming, welding glueing etc. None of such realisations has been disclosed in the originally filed application"*. The first auxiliary request was held not to be allowable on the same grounds (Article 123(2) EPC). The Opposition Division however found that the claims according to the second auxiliary request met the requirements of Article 123(2) and (3) EPC, and that the claimed subject-matter was novel and inventive over the available prior art including documents:

D1 : US-A-4 854 023;

D2 : US-A-4 439 977.

III. The patent proprietor (appellant I) and the opponent (appellant II) each lodged an appeal against the decision of the Opposition Division. The notices of appeal were received at the EPO on 23 and 11 August 2006, respectively, and the appeal fees were paid on the same days. The statements setting out the grounds of appeal were received at the EPO on 19 October and 25 August 2006, respectively.

IV. With its statement setting out the grounds of appeal, the appellant I filed a new main request and first to fourth auxiliary requests.

Claim 1 according to the main request corresponds to claim 1 of the first auxiliary request considered by the Opposition Division and reads as follows:

"1. A method of forming a string of pocketed coil springs comprising feeding a supply of fabric (16) such as to provide first and second generally parallel fabric plies (24, 26), inserting a series of axially compressed springs (14, 14a) between the first and second plies (24, 26), joining the first and second plies together by forming a longitudinal seam (54) proximate free edges (28) of the first and second plies (24, 26), the plies being joined at the opposite edges to the free edges (28), allowing the springs (14, 14a) to at least partially axially expand within the fabric in the same orientation as they are inserted between the plies (24, 26) so that the longitudinal axis (60) of each of the springs is generally perpendicular to the longitudinal seam (54), and forming a transverse seam (80, 80a) in the fabric between adjacent springs (14, 14a) to thereby enclose each of the springs within

a fabric pocket (86), characterized in that the springs (14, 14a) are allowed to at least partially expand within the fabric after joining the first and second plies (24, 26) by forming the longitudinal seam (54) and prior to forming the transverse seams (80, 80a) which are formed generally parallel to the longitudinal axes (60) of the at least partially expanded springs (14, 14a)."

V. In the communication dated 12 July 2007 accompanying the summons to oral proceedings pursuant to Article 11(1) of the Rules of Procedure of the Boards of Appeal, the Board expressed the preliminary opinion that the finding of the Opposition Division that there was no basis in the application as filed for the feature of claim 1 of the main request according to which the plies were joined at the opposite edges to the free edges was correct. As regards the first auxiliary request the Board stated that it would appear that the amendments made did not extend the scope of protection and that the subject-matter of claim 1 was novel over D1 because the latter did not disclose the following features:

(a) folding the fabric about a longitudinal fold line into said first and second generally parallel fabric plies;

(b) allowing the springs to partially expand after joining the first and second plies by forming the longitudinal seam but prior to forming the transverse seam.

VI. Oral proceedings, at the end of which the decision of the Board was announced, took place on 16 October 2007.

The appellant I requested that the decision under appeal be set aside and that the patent be maintained on the basis of the main request as filed on 4 January 2007, or, as first auxiliary request with claims 1 to 20 and description columns 1 to 4 as filed during the oral proceedings, columns 5 to 9 of the description and drawings as granted.

The appellant II requested that the decision under appeal be set aside and the European patent No. 1 171 377 be revoked.

VII. Claim 1 according to the first auxiliary request filed during the oral proceedings differs from the first auxiliary request previously on file only by way of correction of a typing error ("an" replaced by "and") and reads as follows:

"1. A method of forming a string of pocketed coil springs comprising feeding a supply of fabric (16), folding the fabric about a longitudinal fold line into first and second generally parallel fabric plies (24, 26), inserting a series of axially compressed springs (14, 14a) between the first and second plies (24, 26), joining the first and second plies together by forming a longitudinal seam (54) proximate free edges (28) of the first and second plies (24, 26), allowing the springs (14, 14a) to at least partially axially expand within the fabric in the same orientation as they are inserted between the plies (24, 26) so that the longitudinal axis (60) of each of the springs is generally perpendicular to the longitudinal seam (54), and forming a transverse seam (80, 80a) in the fabric between adjacent springs (14, 14a) to thereby enclose

each of the springs within a fabric pocket (86), characterized in that the springs (14, 14a) are allowed to at least partially expand within the fabric after joining the first and second plies (24, 26) by forming the longitudinal seam (54) and prior to forming the transverse seams (80, 80a) which are formed generally parallel to the longitudinal axes (60) of the at least partially expanded springs (14, 14a)."

Independent claim 13 is identical to claim 15 of the first auxiliary request previously on file and reads as follows:

"13. A system for forming a string (12) of pocketed coil springs, each of the springs (14, 14a) being enclosed within a pocket (86) formed of fabric, the system comprising a fabric supply station for providing first and second generally parallel fabric plies (24, 26) as a fabric folded about a longitudinal fold line, a spring insertion station (34) at which axially compressed springs (14, 14a) are individually inserted between the first and second plies (24, 26), a longitudinal seam forming station (52) located downstream from the spring insertion station (34), the longitudinal seam forming station (52) joining the first and second plies (24, 26) of the fabric together by forming a longitudinal seam (52) proximate free edges (28) of the first and second plies, a spring expansion station (70) permitting the springs (14, 14a) to at least partially expand between the first and second plies (24, 26) within the fabric in the same orientation as they are inserted between the plies (24, 26) so that the longitudinal axis (60) of each spring is generally perpendicular to the longitudinal seam

(54), a transverse seam forming station (78) forming a transverse seam (80, 80a) in the fabric to separate each pair of adjacent springs (14, 14a) and thereby enclose, each of the springs within a fabric pocket (86) when inserted therein, and a transport station (62, 94) which advances the fabric (16) and springs (14, 14a) contained therein through the respective stations, characterized in that the spring expansion station is downstream of the longitudinal seam forming station, and in that the transverse seam forming station (78) forms the transverse seams (80, 80a) generally parallel to the longitudinal axes (60) of the at least partially expanded springs, wherein the transverse seam forming station (78) is downstream of the spring expansion station (70)."

VIII. The arguments of appellant I in support of its requests can be summarized as follows:

The application as filed disclosed that the pockets into which the springs were inserted were typically defined by two plies of a fabric strip connected together and that the two-ply fabric strip was generally formed by folding a strip of double width upon itself along a longitudinal centreline. The term "generally" indicated to a person skilled in the art that while the forming of the two-ply fabric by folding was a common and widespread approach, other approaches were contemplated. The application as filed disclosed that the invention preferably began with the insertion of a compressed coil spring between upper and lower plies of a folded thermally welded fabric. Also here, the use of the term "preferably" meant that it was not necessary to use upper and lower plies of a folded

fabric. Accordingly, it was clear for a person skilled in the art reading the application as filed that all what was required was that two parallel fabric plies were provided which were joined at opposite edges to free edges as defined in the independent claims of the main request.

The claims according to the first auxiliary request were limited by requiring that the fabric was folded about a longitudinal fold line into the first and second plies. This was a possibility disclosed in the application as filed and also clearly falling under the scope of protection of the patent as granted, in particular having regard to the wording of granted claim 15. Therefore, the amendments made in accordance with the first auxiliary request met the requirements of Article 123(2) and (3) EPC.

The subject-matter claimed in accordance with the first auxiliary request was new and involved an inventive step, because D1 and D2 neither disclosed nor suggested the feature of claim 1 that the springs were allowed to at least partially expand prior to forming the transverse seams and the corresponding feature of claim 13 that the transverse seam forming station was downstream of the spring expansion station.

IX. In respect of the main request, appellant II essentially referred to the reasoning of the Opposition Division in the decision under appeal. Appellant II's arguments in respect of the first auxiliary request can be summarized as follows:

Granted claim 1 required that the first and second plies were joined along two lines, one proximate the free edges and the other at the opposite edges. Granted claim 15 defined that the fabric was folded about a longitudinal line for forming the first and second plies such that the opposite edges were joined by the fold line but did not exclude the further join at the opposite edges required by claim 1. Therefore, the claims of the granted patent required the presence of two joins. By omitting the feature that the plies were joined at the opposite edges, claim 1 extended the protection conferred contrary to Article 123(3) EPC.

D1 disclosed all the features of claim 1. Although D1 disclosed that the fabric was folded along two lines, claim 1 did not require a single longitudinal folding line but was to be interpreted generally as requiring at least one fold line. In any case, even in the method according to the patent in suit there were necessarily two fold lines, since the plies of the fabric had to be at a distance in order to allow the springs to be inserted between them. Moreover, the insertion of the springs deformed the folded fabric which then assumed a partly rectangular form. D1 disclosed that the springs were allowed to partially expand when leaving a tubular mandrel which was followed by a welding head for forming the transverse seams. Accordingly, in the method of D1 the springs were allowed to at least partially expand prior to forming the transverse seams. Also the system of claim 13 was known from D1, because the latter disclosed a spring expansion station, namely the zone between the mandrel and the welding head, which was upstream of the transverse seam forming station. In any event, the claimed subject-matter did

not involve an inventive step. The provision of a single fold line could not justify the presence of an inventive step, as this was a mere formal difference with respect to the method of D1. Moreover, the skilled person would recognise that in order to allow the welding head of D1 to properly form the transverse seams, it should be at a sufficient distance from the mandrel, i.e. at a distance greater than half of the width of the springs. In such case, the springs would necessarily expand when exiting the mandrel, thus prior to forming the transverse seams.

Reasons for the Decision

1. The appeals are admissible.

2. *Main request*

Considering that the arguments submitted by appellant I in support of the allowability of the feature of claim 1 that the plies are joined at the opposite edges to the free edges are the same that were submitted before the Opposition Division (page 5 of the decision under appeal, paragraph beginning with: "*The patentee argued...*"), that the Board agrees with the reasoning of the Opposition Division for finding that there is no basis in the application as filed for this feature (page 5 of the decision under appeal, paragraph beginning with "*The opposition division cannot follow this view...*"), and that this reasoning is complete and convincing, the appellant I's main request is refused because the amendments made violate Article 123(2) EPC

for the same reasons given by the Opposition Division under point 2.1 of the decision under appeal.

3. *First auxiliary request*

3.1 *Amendments*

- 3.1.1 Claim 1 consists of the combination of granted claims 1 and 2, with the feature "the plies being joined at opposite edges to the free edges" being omitted and the feature "folding the fabric about a longitudinal fold line" being inserted. This amendment has the effect of removing the cause of non-compliance with Article 123(2) EPC, thus bringing claim 1 in line with the disclosure of the application as filed (see e.g. original claim 1).

Independent claim 13 is similarly amended by combining granted claims 17 and 18, deleting the feature "the plies being joined at the opposite edges to the free edges" and inserting the feature that the "parallel fabric plies are provided as a fabric folded about a longitudinal fold line".

Dependent claims 2 to 12 and 14 to 20 correspond to granted claims 5 to 14, 16, 21 to 27, which are undisputedly supported by the disclosure of the application as filed.

The description is amended to bring it into conformity with the amended claims and to acknowledge document D1.

Therefore, the amendments made do not give rise to objections under Article 123(2) EPC. This in fact, was not disputed.

3.1.2 The amendments are also not objectionable under Article 123(3) EPC.

Granted claim 1 recites "*the plies being joined at the opposite edges to the free edges*". Granted claim 15, which is dependent on claim 1, defines that "*the step of feeding the fabric comprises folding the fabric about a longitudinal fold line into the first and second plies such that the opposite edges are joined by the fold line*" and therefore makes clear that granted claim 1 includes the possibility that the plies are joined at the opposite edges to the free edges by means of the fold line and not necessarily by a join provided by means of a joining process such as welding, glueing, seaming, etc. Accordingly, the amendment to claim 1 consisting of omitting the feature "the plies being joined at opposite edges to the free edges" and introducing the feature "folding the fabric about a longitudinal fold line" limits the scope of protection to the above-mentioned possibility. The analogous amendments made to claim 13 likewise do not extend the protection conferred.

Appellant II submitted that granted claim 15 should be read to require that the first and second plies were joined at the opposite edge by the fold line *in addition* to these being joined by a join (provided by means of a joining process) as required by claim 1. In the Board's view this interpretation of claim 1 is artificial: it does not correspond to the literal wording of granted claims 1 and 15 and refers to a possibility which, technically, does not make sense. Granted claim 1 does not specify a step of making a

join but refers to a configuration of the plies, namely the configuration in which they are joined ("*the plies being joined*") at the opposite edges. Also granted claim 15 refers to this configuration of the plies and specifies that the opposite edges are joined by the fold line. It is therefore clear that claim 15 refers to the particular case encompassed by the generic wording of claim 1 in which the plies are joined *by the fold line* and by no other means. Furthermore, in the absence of any indication in the patent in suit in this respect, the skilled reader would exclude the possibility mentioned by the appellant II, as he would regard the provision of a further join in addition to the fold line devoid of any practical purpose.

3.2 *Prior art - Novelty*

3.2.1 Using the wording of claim 1 of the patent in suit, D1 undisputedly discloses (see Figs. 1, 5) a method of forming a string of pocketed coil springs comprising feeding a supply of fabric (14), providing first and second generally parallel fabric plies (see Fig. 1), inserting a series of axially compressed springs (12, see Figs. 3A-3C and col. 9, lines 26 to 32) between the first and second plies, joining the first and second plies together by forming a longitudinal seam proximate free edges of the first and second plies (see col. 15, lines 19 to 37 and Fig. 6), allowing the springs to partially axially expand (see col. 14, lines 40 to 46) within the fabric in the same orientation as they are inserted between the plies so that the longitudinal axis of each of the springs is generally perpendicular to the longitudinal seam, forming a transverse seam (see Fig. 5) in the fabric between adjacent springs to

thereby enclose each of the springs within a fabric pocket, the transverse seams being formed generally parallel to the longitudinal axes of the springs.

According to D1, see Fig. 1, the fabric is folded about two lines into a U-shape before inserting the springs. By reciting "folding the fabric about a longitudinal fold line into first and second generally parallel fabric plies" claim 1 of the patent in suit makes clear that the two plies between which the springs are inserted are separated by the fold line. This is not the case in D1 (see Fig. 1), where the two parallel plies between which the springs are inserted, are separated by a portion of fabric. Therefore, D1 does not disclose the feature of claim 1 according to which the fabric is folded about a longitudinal fold line into first and second generally parallel fabric plies.

Further according to the teaching of D1, the springs are allowed to partially expand within the fabric after joining the first and second plies by forming the longitudinal seam. This partial expansion (see Fig. 5) occurs when the springs exit the mandrel 56 (see col. 15, lines 7 to 13; note that a final (full) expansion occurs when the springs exit members 120, at which time they are retained only by the fabric pockets, see col. 14, lines 43 to 46). Appellant II contended that this partial expansion occurred prior to forming the transverse seams. This cannot be accepted. In the method of D1, as explained on col. 14, lines 3 to 27 with reference to Figs. 4 and 5, a spring to be enclosed within a fabric pocket is urged by head 58 against a first seam 103 which has just been previously provided (see Fig. 5); it is then displaced by head 58

downstream until the spring passes beyond the welding heads 100. Only at this moment (see Fig. 6), after the spring has left the mandrel 56 and thus has partially expanded, is the second seam 103 for enclosing the spring formed. This second seam, however, also serves as the first seam for enclosing the next spring, which is then forwarded in a compressed state by head 58 through the mandrel. Accordingly, only one of the transverse seams enclosing a spring (namely, for a given spring, the rear transverse seam) is formed after the spring has partially expanded. It is noted that claim 1 recites that the springs are allowed to at least partially expand prior to forming the transverse seams (note: plural form) and therefore requires that both seams enclosing a spring are formed when the spring is at least partially expanded. This reading of claim 1 is fully consistent with the description, which discloses (see Fig. 2) that the front and rear transverse seams enclosing a spring are made after the spring has been allowed to expand. Therefore, D1 also does not disclose the feature of claim 1 according to which the springs are allowed to partially expand prior to forming the transverse seams.

This conclusion remains unchanged even if D1 is read in accordance with appellant II's view as disclosing the forming of a transverse seam when a spring is within and close to the exit of the mandrel 56, i.e. in the position shown in Fig. 5. Since D1 is silent about the distance between the welding heads 100U and 100L, it cannot be inferred from the disclosure of Fig. 5 whether the spring is sufficiently outside the mandrel (i.e. by at least half of its width as acknowledged by

appellant II itself) such that it has partially expanded before the seam 103 is formed.

3.2.2 Analogously, D1 does not disclose at least the following features of claim 13 of the patent in suit:

a fabric supply station for providing first and second generally parallel fabric plies as a fabric folded about a longitudinal fold line,
the transverse seam forming station is downstream of the spring expansion station.

In fact, in the assumption that there is in D1 a spring expansion station which corresponds to the portion of the apparatus of D1 next to the mandrel 56 in which the expansion occurs, the spring expansion station has a width which is equal to or greater than the width of a spring (i.e. about the height of the mandrel's exit opening). In such case, the transverse seam forming station is located within the spring expansion station rather than downstream thereof.

3.2.3 D2 is cited in the description of the patent in suit (see par. [0004] to [0006]). D2 discloses a method and an apparatus according to the preamble of claims 1 and 13, respectively.

Using the wording of claim 1, D2 discloses a method of forming a string of pocketed coil springs comprising feeding a supply of fabric (25), folding the fabric about a longitudinal fold line into first and second generally parallel fabric plies (see col. 3, lines 24 to 29), inserting a series of axially compressed springs (36) between the first and second plies (see

col. 3, lines 59 to 62), joining the first and second plies together by forming a longitudinal seam (46) proximate free edges of the first and second plies (see col. 3, line 65 to col. 4, line 2), allowing the springs to at least partially axially expand within the fabric in the same orientation as they are inserted between the plies so that the longitudinal axis of each of the springs is generally perpendicular to the longitudinal seam (as explained by the Opposition Division in the decision under appeal, see page 16, this expansion takes place after leaving the indexing rolls 296, 298, see col. 10, lines 55 to 58, Figs. 1 and 13), and forming a transverse seam (52a-c) in the fabric between adjacent springs to thereby enclose each of the springs within a fabric pocket (see col. 4, lines 7 to 13; see Fig. 3).

D2 undisputedly does not disclose the features of the characterizing portions of claims 1 and 13. In fact, according to the teaching of D2, the springs are maintained compressed prior to formation of both the longitudinal and the transverse seam (see Fig. 4; see col. 3, line 62 to col. 4, line 2; note that the springs are turned from the position of Fig. 4 so that they come in the position of Fig. 3).

3.2.4 Therefore, the subject-matter of independent claims 1 and 13 is novel over the cited prior art.

3.3 *Inventive step*

3.3.1 The starting point of the invention according to the patent in suit (see par. [0004] to [0007]) is document D2. The problem underlying the patent in suit (see par.

[0007]) is to provide a method and a system which does not require the turning of the springs within the pockets for alignment of the spring axes in a generally parallel and ordered arrangement nor operator intervention to unhook or disentangle the springs nor repair the damaged fabric surrounding the springs. This problem is effectively solved by a method and system according to claims 1 and 13, respectively.

3.3.2 The Board agrees with the Opposition Division's view that D2 represents the closest prior art (see page 15, last paragraph, of the decision under appeal) because it has more structural similarity with the invention of the patent in suit due to the fact that the springs are inserted between two generally parallel plies of a fabric folded about a longitudinal fold line.

3.3.3 Starting from D2, there is no indication in the prior art to solve the above mentioned problem in the manner indicated by claims 1 and 13 of the patent in suit. Indeed, the partial expansion of the springs occurring in D1 (see above points 3.2.1 and 3.2.2) when the springs exit the mandrel is not described as having any specific function. It can only be seen as the necessary consequence of the fact that the mandrel 56 is provided within the guiding members 120 (the springs necessarily expand when exiting the mandrel since the walls of the mandrel have a certain thickness). There is therefore no reason for a person skilled in the art to consider implementing this partial expansion of the springs known from D1 in the method and system of D2.

3.3.4 The appellant II in fact only presented arguments concerning inventive step taking document D1 as the

starting point. However, even starting from D1 there is no reason for a skilled person to modify the known method and system such as to arrive at a method and system falling within the scope of claims 1 and 13, respectively, of the patent in suit.

Indeed, forming the transverse seams after the respective spring has expanded would mean forming both the transverse seams enclosing a spring after the spring has left the mandrel 56. This would imply that a spring pushed by head 58 (see Fig. 4) does not abut against a previously formed seam but against a spring. This, however, is contrary to the specific teaching of D1 that a spring should abut against a previously formed seam (see col. 14, lines 9 to 13) and moreover represents a possibility that would be discarded by a skilled person since it could lead to undesired entanglement of the springs.

Even assuming that the transverse seam is formed in the configuration shown in Fig. 5, between a first spring completely outside the mandrel 56 and a second spring within the mandrel, as submitted by appellant II, there is no reason for a skilled person to consider allowing the spring to exit the mandrel for a distance such that the spring is allowed to expand (i.e. about half of its width). In fact, the skilled person would rather consider to maintain the spring well within the mandrel during the operation of the welding head such that the spring does not interfere with the adjacent spring, with the welding head 100U during the descent of the latter, and with the fabric (which is supported by the upper surface of the mandrel and is displaced by the welding head).

3.3.5 Therefore, the subject-matter of independent claims 1 and 13, and likewise of dependent claims 2 to 12 and 14 to 20, is not obvious to a person skilled in the art (Article 56 EPC).

3.4 It follows that the patent documents in accordance with the first auxiliary request of appellant I form a suitable basis for maintenance of the patent in amended form.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The case is remitted to the department of first instance with the order to maintain the patent as follows:
 - claims 1 to 20 and description column 1 to 4 as filed during the oral proceedings before the Board;
 - description columns 5 to 9 and drawings Figures 1 to 8 as granted.

The Registrar:

The Chairman:

M. Patin

P. Alting van Geusau