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D E C I S I O N
of 16 March 1995

Case Number: T 0163/93 - 3.2.4

Application Number: 84112842.4

Publication Number: 0141379

IPC: A44B 19/60

Language of the proceedings: EN

Title of invention:

Method and apparatus for forming upper stops of a concealed type slide fastener

Patentee:

YKK CORPORATION

Opponent:

Opti Patent-, Forschungs- und Fabrikations- AG

Headword:

-

Relevant legal provisions:

EPC Art. 56

Keyword:

"Inventive step - first auxiliary request - yes"

Decisions cited:

-

Catchword:

-



Case Number: T 0163/93 - 3.2.4

D E C I S I O N
of the Technical Board of Appeal 3.2.4
of 16 March 1995

Appellant: Opti Patent-, Forschungs- und Fabrikations- AG
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Decision under appeal: Decision of the Opposition Division of the
European Patent Office dispatched on 14 December
1992 rejecting the opposition filed against
European patent No. 0 141 379 pursuant to
Article 102(2) EPC.

Composition of the Board:

Chairman: C. A. J. Andries
Members: R. E. Gryc
J. P. B. Seitz

Summary of Facts and Submissions

- I. The Appellant (Opponent) lodged an appeal, received on 13 February 1993, against the decision of the Opposition Division, dispatched on 14 December 1992, rejecting the opposition filed against the European patent No. 0 141 379.

The statement setting out the grounds of appeal was received on 15 April 1993.

The fee for appeal was paid on 12 February 1993.

- II. Opposition was filed against the patent as a whole and based on Article 100(a) EPC.

The Opposition Division held that the grounds for opposition mentioned in Article 100(a) EPC did not prejudice the maintenance of the patent unamended.

- III. In the statement setting out the grounds of appeal, the Appellant cited documents:

(D3) DE-A-2 339 887; and

(D4) JP-A-55/101204, cited for the first time, although mentioned in the examination procedure.

The Appellant drew attention to the following, namely

- that D3 and D4 referred to the same technology,
- that the problems to be solved in D3 and in the impugned patent were the same, and
- that D3 taught that the described method could also be used on concealed type slide fasteners.

The Appellant was thus of the opinion that to combine the teachings of D3 and D4 in order to arrive at the method of Claim 1 and at the apparatus of Claim 3 did not involve an inventive step.

IV. In reply the Respondent (Proprietor of the patent) alleged that the teaching of D3 was ambiguous as far as the type of fastener referred to was concerned and that, although D4 is concerned with concealed type slide fasteners it revealed a method and an apparatus completely different from the ones according to the invention. The Respondent was of the opinion that there was no reason for a skilled person to combine the teachings of D3 and D4 because of the different types of fasteners respectively disclosed therein.

V. Oral proceedings took place on 16 March 1995.

Starting from the prior art disclosed in D3 which it considered to be the closest to the method according to the invention, the Appellant contended that D3 already taught the skilled person that the inter-engaging heads of the fastener elements to be fused to form the upper stops must be expelled and exposed from the margins of the fastener tapes before the fusing step.

He also alleged that implementing the method described in D3 (see in particular page 4, lines 2 to 8 and 28 to 32) implied necessarily that the margins of the tape be held in position to allow the work to be done and he drew attention to the similarity between Figure 4 of D3 and Figure 8 of the opposed patent.

The Appellant was of the opinion that the invention was only an optimisation of the teaching of D3 and that it did not imply an inventive step.

As far as the apparatus in Claim 3 was concerned, the Appellant considered that D4 disclosed the closest state of the art and that the differences between the subject-matter of Claim 3 and the apparatus of D4 were merely obvious features the combination of which involved no inventive step.

The Respondent filed new claims and an amended description as a first subsidiary request. The Respondent agreed that Figure 2 of the opposed patent did not represent the actual and correct position of the coupling heads relative to the edge of the fastener tape, said heads normally projecting slightly from the said edge.

The Respondent stressed the importance of the engaging and arresting steps of the method according to the invention which, in its opinion, were only able to warrant a precise displacement of the coil relative to the margin of the tapes.

The Respondent also considered that D3 disclosed the closest state of the art and pointed out that there was no need in D3 for arresting the tape since D3 was neither concerned with concealed type fasteners, nor with the problem of expelling the coil from the fastener tapes.

VI. The Appellant requested that the decision under appeal be set aside and that the European patent be revoked.

The Respondent requested that the decision under appeal be set aside and that a patent be maintained on the basis of the following documents:

1. As main request:

Claims 1, 2 and 5 as granted and 3 and 4 as filed during the oral proceedings.

2. As first auxiliary request:

Claims 1 to 5 as filed during the oral proceedings.

Description: columns 1 and 2 as filed during the oral proceedings and columns 3 to 7 as granted.

Drawings: Figures 1 to 8, as granted.

3. As second auxiliary request:

New Claims 1 to 3 corresponding to claims 3 to 5 as filed during the oral proceedings.

VII. The wording of Claim 1 as granted (main request) reads as follows:

"1. A method of forming upper stops of a concealed type slide fastener having a pair of fastener stringers (1) each comprising a fastener tape (2) having a turn-up (5) along one side thereof and a row of fastener elements made of thermoplastic resin coil (3) secured to the turn-up, each fastener element having a leg portion and an interengaging head, the method comprising the steps of:

- maintaining the two stringers in a spaced relationship;
- engaging and arresting the element-mounting-side margin of the tapes, and
- fusing a determined number of fastener elements to form the upper stops,

characterized in that before said fusing step, the fastener elements on each of the fastener stringers (1) are urged away from the leg portions and towards the interengaging heads of the element, so that the coils (3) are expelled from the fastener tapes (2) and the interengaging heads of the fastener elements of the coils are exposed from the element mounting-side margins of the fastener tapes (2)."

The wording of Claim 1 as filed during the oral proceedings (first subsidiary request) reads as follows:

"1. A method of forming upper stops of a concealed type slide fastener having a pair of fastener stringers (1) each comprising a fastener tape (2) having a turn-up (5) along one side thereof and a row of fastener elements made of thermoplastic resin coil (3) secured to the turn-up, each fastener element having a leg portion and an interengaging head, the method comprising the steps of:

- maintaining the two stringers in a spaced relationship;

- engaging and arresting the element-mounting margin of the tapes;

- and fusing a determined number of fastener elements to form the upper stops,

characterized in that before said fusing step, a base having an upper face and a pair of spaced arresting portions (25) projecting over said upper face, is raised, said upper face contacting the coils (3) of the fastener elements in the raised position of said base and said arresting portions being inserted between the stringers for engaging and arresting the element-mounting-side margins of the tapes, and the fastener elements on each of the fastener stringers (1) are urged away from the leg portions and towards the interengaging heads of the element, so that the coils (3) are expelled

from the fastener tapes (2) and the interengaging heads of the fastener elements of the coils are exposed from the element mounting-side margins of the fastener tapes (2)."

The wording of Claim 3 as filed during the oral proceedings (main request and the two subsidiary requests) reads as follows:

"3. An apparatus for forming upper stops on a concealed type slide fastener chain comprising a pair of continuous fastener stringers each consisting of a fastener tape having a turn-up along one side thereof and fastener elements of thermoplastic resin secured to the turn-up, each fastener element having a leg portion and an interengaging head, the apparatus comprising:

- means for transporting said fastener chain in a predetermined path;
- a base (10) provided along said path of the fastener chain;
- an ultrasonic horn (13) provided on the side opposite to said base with respect to said path of the fastener chain and for vertical movement, said base (10) being mounted for vertical movement towards and away from the fastener chain and having a pair of guide channels (26) vertically formed on the opposite sides of the centerline of said path of the fastener chain;
- a pair of punches (27) mounted for vertical movement in said guide channels, respectively;

said base having means for feeding cord-like members of auxiliary stock for the upper stops to the guide channels, said punches being adapted to cut the leading portions of the cord-like members when they are raised;

- projections (22) formed on said base on the upstream and downstream sides of said guide channels such that

the projections are inserted between the pair of stringers when the base is raised; and
- hammers (11) provided on the opposite sides of the path of the fastener chain and each having a punch portion (31) overlying the base and reciprocating towards and away from said projections such that when it moves towards said projections it urges the elements of the fastener stringer in the direction away from the leg portions and towards the interengaging heads of the elements, said projections (22) having portions (25) which engage and arrest the element-mounting-side margins of the fastener tapes when said elements are urged towards the projections and said ultrasonic horn having portions (33) which press the elements extending between said projections against said punches in their raised positions."

Reasons for the Decision

1. The appeal is admissible.
2. *Late filed document D4*

Due to its relevance, late filed document D4 cannot be disregarded and has therefore been considered by the Board of its own motion (cf. Article 114(1) EPC).

3. *Modifications*

- 3.1 Claim 1 as filed at the oral proceedings.

Between the word "step" and the expression "the fastener elements" of the characterising part of Claim 1 as granted (see column 7, line 30), the following paragraph has been introduced:

"... a base having an upper face and a pair of spaced arresting portions (25) projecting over said upper face, is raised, said upper face contacting the coils (3) of the fastener elements in the raised position of said base and said arresting portions being inserted between the stringers for engaging and arresting the element-mounting-side margins of the tapes, and ..."

Support for these added features can be found on page 6 lines 28 to 33 and page 7, lines 27 to 33 of the description and in Figures 6(A) to 6(D) of the application as originally filed.

These features specify more precisely the way in which the margins of the tapes are engaged and arrested during the engaging and arresting steps of the method according to the invention, restricting thereby the protection conferred.

Therefore no objection can be raised under Article 123 EPC.

3.2 Claim 3 as filed at the oral proceedings.

The following sentences, namely

"... each fastener element having a leg portion and an interengaging head ..." and

"... said base having means for feeding cord-like members of auxiliary stock for the upper stops to the guide channels, said punches being adapted to cut the leading portions of the cord-like members when they are raised.",

have been added to Claim 3 as granted, respectively between the words "turn-up" and "the apparatus" (see

column 7, lines 50 and 51) and between the words "respectively" and "projections" (see column 8, lines 9 and 10).

Support for these added features can be found respectively on page 7, lines 18 and 19; on page 5, lines 13 to 17 and on page 6, lines 6 to 12 of the description and in Claim 6 of the application as originally filed.

Since moreover these additional features restrict the protection conferred no objection can be raised under Article 123 EPC.

4. *Interpretation of the independent claims*

4.1 In its reply to the statement setting out the grounds of appeal and in order to distinguish the invention from the state of the art the Respondent stressed the importance of the fact that the invention concerns specifically a "concealed type" slide fastener. The exact meaning of this expression should thus be clearly determined before a decision can be reached on the question of patentability of the subject-matter of the independent Claims 1 and 3.

4.2. Therefore, taking into account:

- on the one hand the acknowledgement made by the Respondent at the oral proceedings that the representation on Figure 2 of the position of the coupling heads was not correct, and
- on the other hand the unequivocal information given in column 6, lines 8 to 10 and 17 to 22 of the description and the disclosure of the Figures 6, 7 and 8,

the Board considers that the expression "concealed type" slide fastener in the meaning of the invention refers to a slide fastener having coupling heads which slightly project outwardly beyond the adjacent edge of the associated tape when the coupling elements are disengaged and which are completely covered by the turns-up when the coupling heads of the two opposed fastener elements are mutually engaged.

5. *Novelty*

After having examined all the cited documents, the Board is satisfied that none of them discloses a method and an apparatus comprising in combination all the features described respectively in Claim 1 as granted or in Claims 1 and 3 as filed during the oral proceedings. Since this has not been disputed by the Appellant, there is no need for further detailed substantiation and the subject-matter as set forth in these independent claims is to be considered as novel within the meaning of Article 54 EPC.

6. *The closest state of the art*

6.1. Claim 1 (as granted and as filed during the oral proceedings).

D3 concerns a method of manufacturing different types of slider fasteners including concealed-type fasteners having carrier tapes with turn-ups each carrying a row of thermoplastic coupling elements secured thereto (see D3: page 2, lines 3 to 7).

For the above-mentioned reasons (cf. Section 4.2 above) and contrary to the arguments of the Respondent, the fact that parts of the known coupling elements project outwardly beyond the edge of the associated tapes (cf.

D3: Figures 1 to 4) cannot be considered to be inconsistent with the statement that these figures relate to concealed-type fasteners.

Moreover, the problem to be solved in D3 is the same as that according to the invention i.e. to provide a method of forming upper stops which obviates the drawbacks of loosing flexibility of the tape ends and of making the sewing threads fragile (see D3: page 3, lines 17 to 20 and page 5, lines 13 to 16).

For these reasons, the Board considers that D3 discloses the state of the art closest to the method described in the independent method claims.

The method claimed in Claim 1 as granted differs mainly from this state of the art by the following steps of:

- engaging and arresting the element-mounting-side margin of the tapes, and
- urging the fastener elements so that the coils are expelled from the fastener tapes.

The method claimed in Claim 1 as filed during the oral proceedings differs additionally by the way in which the margins of the tapes are engaged and arrested.

6.2 Claim 3 (as filed during the oral proceedings).

None of the documents cited during the opposition proceedings describes the apparatus for forming the stops in as much detail as document D4. This document concerns an apparatus for forming upper stops on a concealed-type fastener comprising all the characteristics of the pre-characterising portion of Claim 3 as filed during the oral proceedings and some of the characteristics described in its characterising

part. Therefore, the Board considers that D4 discloses the state of the art closest to the apparatus according to the independent apparatus claim which differs mainly from the apparatus according to D4 in that:

- the base is mounted for vertical movement,
- projections are formed on the base, and
- portions of said projections are provided for engaging and arresting the margins of the tapes when the fastener elements are urged towards the projections.

7. *Problems and solutions*

7.1 The Board sees the problem, as objectively determined when starting from the state of the art described either in D3 as regards the method or in D4 as regards the apparatus, as being to improve the exposure of the inter-engaging heads of the fastener elements from the margins of the fastener tapes in order to ensure that melting of the turn-ups and infiltration of the liquid of the melted auxiliary stock into the turn-ups and into the threads with which the coils of fastener elements are sewn to the tapes be prevented (see column 1, lines 50 to 57).

7.2 The Board is satisfied that the implementation of the measures claimed in the independent claims provides a solution to the above-mentioned problem.

8. *Inventive step*

8.1 The normal task of the person skilled in the art being in particular to recognise drawbacks and to search for improvements capable of overcoming them, no contribution

to the inventive step of the solution can possibly be seen in the perception of the problem as determined objectively above.

The question to be answered remains thus whether the prior art seen in the light of his general common knowledge would provide the person skilled in the art starting from the method according to D3 and the apparatus according to D4 with enough information and hints to lead him to the solution proposed respectively in the independent Claims 1 and 3.

8.2 Claim 1 as granted.

If, when fusing the parts of the coupling elements projecting outwardly beyond the edge of the associated tape of the fastener according to D3 the person skilled in the art were to find that the softened thermoplastic material still flows into the turn-ups and between the threads of the carrier tapes and thereby still causes a loss of the flexibility of the tapes ends, he would normally and logically try to move these portions of the coupling elements, where the welding is made, as far as possible away from the margin of the turn-ups. To urge away and expel the coils from the tapes, he has no means other than to engage a part of the tapes in order to retain and arrest them when pulling or pushing the fastener elements.

Therefore, the Board is of the opinion that the general idea of engaging and arresting the margin of the tapes in order to better expel the coils from the edge of the tapes belongs to the few solutions which come logically and immediately to the mind of the skilled person confronted with the above-mentioned problem, and that

this general idea therefore is considered by the Board as not involving an inventive step within the meaning of Article 56 EPC.

8.3 Claims 1 and 3 as filed during the oral proceedings.

The Board considers that the specific manner, whereby the margins of the tapes are engaged and arrested in abutment against stops according to the invention is not obvious in view of the teachings of D3 or D4 since, in order to expose the coupling heads of the fastener element more from the turn-ups, the skilled person would normally simply pull or push the coils while gripping the tapes to retain them.

In the state of the art the skilled person would not find any indication or hint for providing stops for the edges of the tapes to be retained in abutment. The introduction of such stops between the opposed edges would be considered by the skilled person as a complication of the method and apparatus in contradiction with the economical trend and he would normally be reluctant to adopt such a solution.

8.4 For the foregoing reasons, the Board is convinced that an indication or suggestion to improve the method and the apparatus known respectively from D3 and D4 in accordance with the teaching of respectively Claim 1 and 3 filed during the oral proceedings can neither be found in the cited prior art, nor can it be deduced from the general knowledge of a skilled person. The subject-matter of these independent Claims 1 and 3 filed during the oral proceedings therefore involves an inventive step within the meaning of Article 56 EPC.

9. *Main request*

The main request cannot be accepted since the subject-matter of one of the independent claims on which it is based (i.e. Claim 1 as granted), does not involve an inventive step within the meaning of Article 56 EPC (see Section 8.2 above).

10. *First auxiliary request*

Since the subject-matter of each of the independent Claims 1 and 3, as filed during the oral proceedings, on which the first auxiliary request is based is considered as involving an inventive step (see Sections 8.3 and 8.4 above), and since the remaining dependent Claims (i.e. 2, 4 and 5), as well as the description and drawings as specified in the first auxiliary request also satisfy the requirements of the EPC, this request is allowable and the opposed patent may be maintained on this basis.

11. *Second auxiliary request*

The first auxiliary request being allowable, the second auxiliary request does not need to be considered.

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 maintain the patent in the following version:

Description:

- columns 1 and 2 as filed during the oral proceedings (first auxiliary request).
- columns 3 to 7 as granted.

Claims:

- Claims 1 to 5 as filed during the oral proceedings (first auxiliary request).

Drawings:

- Figures 1 to 8 as granted.

The Registrar:



N. Maslin

The Chairman:



C. Andries