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D E C I S I O N
of 24 October 2001

Case Number: T 0226/99 - 3.2.4

Application Number: 94115380.1

Publication Number: 0648441

IPC: A44B 11/26

Language of the proceedings: EN

Title of invention:

Buckle

Applicant:

YKK CORPORATION

Opponent:

-

Headword:

-

Relevant legal provisions:

EPC Art. 84, 123(2), 54 and 56

Keyword:

"Novelty (yes)"

"Inventive step (yes)"

Decisions cited:

-

Catchword:

-



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Boards of Appeal

Chambres de recours

Case Number: T 0226/99 - 3.2.4

D E C I S I O N
of the Technical Board of Appeal 3.2.4
of 24 October 2001

Appellant: YKK CORPORATION
No. 1, Kanda Izumi-cho
Chiyoda-ku
Tokyo (JP)

Representative: Patentanwälte
Leinweber & Zimmermann
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Decision under appeal: Decision of the Examining Division of the
European Patent Office posted 12 October 1998
refusing European patent application
No. 94 115 380.1 pursuant to Article 97(1) EPC.

Composition of the Board:

Chairman: C. A. J. Andries
Members: R. E. Gryc
C. Holtz

Summary of Facts and Submissions

- I. The appellant lodged an appeal, received on 10 December 1998, against the decision of the Examining Division, dispatched on 12 October 1998, refusing the european patent application No. 94 115 380.1 (publication No. 0 648 441). The fee for appeal was paid simultaneously and the statement setting out the grounds of appeal was received on 11 February 1999.
- II. The Examining Division held that the application did not meet the requirements of Article 56 EPC, having regard to the state of the art disclosed in particular in document EP-A- 0 204 250 (referred to hereafter as D2). In the search report also the following other documents have been cited:
- D1: GB-A-2 262 962
- D3: EP-A-0 467 574
- D4: GB-A-2 150 632.
- III. In reply to communications of the Board, the appellant compared the buckle according to the invention with the state of the art disclosed in D2 and pointed out in particular that the legs of the plug of the known buckle were not curved arcuately inwardly along their entire length but only at their base ends. He contended therefore that, at the time of inserting the plug into the socket, said known legs would be resiliently deformed merely linearly instead of uniformly along their entire length as according to the buckle of the invention. Consequently, in his opinion, the operations

of insertion and release of the plug known from D2 to and from its corresponding socket could not be carried out so easily and smoothly as with the plug according to the invention.

Also, the appellant drew the attention of the Board to the fact that, even the combination of the teaching of D1 with that of D2 did not result in a buckle comprising a plug having legs which are curved inwardly from their base ends toward their leading ends.

Furthermore, the appellant pointed out that, due to the provision of abutment portions at the leading ends of the engaging legs of the plug, the said plug and its socket in engagement did not wobble nor play not only in the direction of insertion of the plug but also in the direction perpendicular to that direction, stabilizing the engagement.

With a letter dated 16 October 2001, the appellant filed a new set of three amended claims and two revised pages for the introduction of the specification to be followed by the original pages of description 7 to 24 as revised in handwriting and filed on 25 September 2001. A new amended Claim 1 with handwritten amendments was filed by fax dated 19 October 2001.

IV. The appellant requested that the decision under appeal be set aside and a patent be granted on the basis of the following documents:

- Claim 1 filed with the fax of 19 October 2001 and claims 2 and 3 filed with the letter dated 16 October 2001.

- Description: pages 1 and 2 filed with the letter of 16 October 2001 and revised pages 7 to 24 filed with letter of 25 September 2001 to be renumbered 3 to 20.
- Drawings (Figures 1 to 9) as filed on 5 October 2000.

V. The wording of Claim 1 reads as follows:

"A buckle including a plug member (10) and a socket member (20) which are releasably engageable with each other; said plug member (10) including a base (12) and a pair of resiliently deflectable engaging legs (14, 14) projecting from said base (12) and being symmetrical with each other about a central axis of said plug member and receivable in said socket member (20) having a guide chamber (24) for receptive engagement with the engaging legs (14, 14), with an end opening communicating with said chamber, said engaging legs and said socket member having locking respectively retaining portions (16, 26) disposed on upper and lower surfaces respectively upper and lower plates, each of the engaging legs (14, 14) has an operating portion (18) which, as the leg is received in the socket member, extends through a corresponding slot (21) of the socket member into an exposed position allowing to be depressed inwardly for disengaging the corresponding locking portion (16) of the leg from the corresponding retaining portion of the socket member, said locking portions (16) of the engaging legs being provided with abutment portions (30) engageable with an inner side surface of corresponding one of the retaining portions (26, 26) disposed in the guide chamber of the socket member, said buckle being

characterized in that

(a) each of the engaging legs (14, 14) has an elongated opening (17) extending longitudinally of said leg (14) and also through the thickness of the leg (14)

(b) the legs are curved arcuately inwardly from their base ends to their leading ends (ie along their entire length) so that the leading ends converge toward each other, with the inner peripheral walls (14a, 14a) and each of said opening (17) being curved arcuately inwardly

(c) the abutment portions (30) are located at the leading ends of the engaging legs."

Reasons for the Decision

1. Admissibility of the appeal.

After examination the appeal has been found to be admissible.

2. *Modifications (Articles 84 and 123(2) EPC)*

2.1 Claim 1:

In comparison with Claim 1 of the application as originally filed (see EP-A-648.441), the following features have been added in the amended Claim 1 at present on file:

(a) - the engaging legs are now said to be:

"symmetrical with each other about a central axis of said plug member".

This feature is described in lines 10 to 12 of column 5 of the application as filed and clearly shown in Figures 1, 2, 3 and 5;

(b) - now the locking respectively retaining portions are described as being:

" disposed on upper and lower surfaces respectively upper and lower plates", This feature is described in Claim 3 of the application as filed;

(c) - each of the engaging legs has additionally:

"an operating portion (18) which, as the leg is received in the socket member, extends through a corresponding slot (21) of the socket member into an exposed position allowing to be depressed inwardly for disengaging the corresponding locking portion (16) of the leg from the corresponding retaining portion of the socket member".

These features have counterparts in column 5, lines 33,34 and in column 6, lines 17 to 20 of the application as filed and are clearly represented in Figures 8 and 11;

(d) moreover, the locking portions of the engaging legs are now:

"provided with abutment portions (30) engageable with an inner side surface of corresponding one of the

retaining portions (26, 26) disposed in the guide chamber of the socket member".

Corresponding features can be found in Claim 3 of the application as filed;

(e) also the legs are said to be curved:

"arcuately inwardly from their base ends to their leading ends (ie along their entire length)".

This feature can be seen on Figures 5 to 9 and 11 of the application as filed;

(f) now the leading ends of the engaging legs:

"converge toward each other".

This feature is described in column 5, lines 21 to 24 and shown on Figures 5 to 7, 9 and 11 of the application as filed;

(g) the inner peripheral walls (14a, 14a) and each of the opening (17) are:

"curved arcuately inwardly".

Counterparts can be found respectively in column 7, lines 39 to 41 and in column 5, lines 30 to 32 of the application as filed;

(h) moreover, now the abutment portions (30):

"are located at the leading ends of the engaging legs".

This feature is represented in particular on Figures 5 and 6 of the application as filed.

The features added to Claim 1 define more clearly and more precisely the different parts of the buckle and they are supported by the application as originally filed. Therefore the corresponding amendments fulfill the requirements of Articles 84 and 123(2) EPC and are allowable.

2.2 Dependent claims 2 and 3:

Said claims correspond to claims 4 and 5 as filed originally which have been amended in order to avoid redundancy and to be consistent with Claim 1. Therefore, no objection can be made against these modifications.

2.3 Description:

In order to comply with Rule 27 EPC, the introductory part of the description has also been modified so as to cite documents reflecting the background art and to disclose the invention as claimed. Also, the first embodiment of the application as originally filed has been deleted and the body of the description has been adapted to the remaining two embodiments initially represented in Figures 5 to 13 renumbered as Figures 1 to 9.

None of these modifications adds any new subject-matter to the specification (Article 123(2) EPC). Therefore they are all acceptable.

2.4 Drawings:

The Figures 1 to 4 of the application as originally filed have been deleted and, in the new specification, the original Figures 5 to 13 have been renumbered as 1 to 9. New references 16b and 14a have been added in new Figures 2 respectively 3 and 5 and a new reference 30 has been added in new Figures 3, 5 and 7. Since these modifications contribute to clarifying the specification without adding any new matter, they are acceptable.

3. *Novelty (Article 54 EPC)*

It is clear from the description and the figures of the documents D1 to D4 cited during the proceedings that none of these prior publications discloses a buckle comprising in combination all the features claimed in Claim 1.

Therefore, the subject-matter of Claim 1 is new in the meaning of Article 54 EPC.

4. *Closest state of the art*

The buckle of D1 comprises in combination all the features of the precharacterising portion of Claim 1. Therefore, it can be considered as representing the state of the art closest to the invention.

In particular, the engaging legs of this known buckle have outer operating portions extending through slots of the socket member into exposed positions allowing to be depressed inwardly for disengaging locking portions of the legs from corresponding retaining portions of the socket member. Moreover, the locking portions of the engaging legs of this known buckle are provided

with abutment portions engageable with the inner side surfaces of the corresponding retaining portions disposed in the guide chamber of the socket member (see, in particular on Figures 1, 2 and 4 of D1, the locking lugs 20 lockingly engaged with the abutments 32 of the side-walls 28 of the socket member).

In order to comply with the requirements of Rule 29(1) EPC, Claim 1 has been delimited against said closest state of the art. Consequently, the features differentiating the buckle of Claim 1 from the one disclosed in D1 are stated in the characterising portion of the claim.

5. *Problem and solution*

Starting from the buckle as disclosed by D1 and taking into account not only the differences stated in the characterising portion of claim 1 but also the indications given in the description of the application (see in particular page 1, lines 7 to 11 of the adapted description dated 16 October 2001), the problem to be solved appears to improve the buckle known from D1 in order to reduce the operating forces required for uncoupling the buckle without impairing the coupling strength and the stability of the buckle in its closed condition.

The solution according to the invention is to render the legs more flexible by providing them with longitudinal openings and to incurvate the legs inwardly along their entire length as well as their inner walls and the openings and to lock the legs more firmly in position against wobbling by locating their abutment portions at the leading ends of the legs.

6. *Inventive step (Article 56 EPC)*

6.1 The legs of the plug member disclosed by D1 are not curved arcuately inwardly and have no elongated opening extending longitudinally through the thickness of the leg. Also the abutment portions of the legs are located close to the locking lugs 20 ie at about half the length of the legs, between the bulged operating portions 19 and the base of the legs (see in particular Figure 4). In said disclosure, nothing teaches or even suggests to modify these features in the direction of the invention.

6.2 D2 discloses in Figures 11 to 14 special embodiments of plug members comprising engaging legs which, at first sight, seem to be provided with elongated openings weakening the strength of the legs. Actually, the teaching of D2 is not, as according to the invention, to cut away the legs of the plug member in order to reduce the operating forces required for uncoupling the buckle but, on the contrary, to reinforce said legs by means of additional reinforcing ribs (53, 58) disposed along the legs (54, 54 and 61, 62) to withstand forces tending to flex the legs toward and away from each other (see D2: page 11, lines 7 to 10).

Therefore, the skilled person starting from the buckle of D1 and looking for reducing the operating forces (ie the forces required for flexing the legs toward each other), would not expect to find a solution in a document (D2) which recommends means necessarily increasing the required operating forces of the buckle.

Moreover, Figures 12 and 14 of D2 show that the legs of the disclosed buckle are not curved but extend straight along their entire length and also that the abutment portions of the legs are located at about the same position as in D1, ie between the operating portions of the legs and the bases of said legs.

Consequently, the skilled person could not find in D2 any hint or clue suggesting to him either to incurve the legs arcuately inwardly along their entire length or to shift the abutment portions to the leading ends of said arcuate legs.

The same reasoning applies to the teachings of D3 and D4.

6.3 Therefore, at the priority date, the state of the art as illustrated by D1 to D4 failed to provide the skilled person with the features of the invention claimed in the characterising portion of Claim 1.

On the contrary, said state of the art would give the skilled person hints leading in a direction opposite to the invention, ie to reinforce the legs of a plug member by the use of an additional rib (see D2), to straighten said legs instead of incurving them and to position the abutment portions between the operating portions and the bases of the legs (see D1 and D2) instead of at their leading ends.

For the foregoing reasons, and since there is a priori no particular reason pleading in favour of a modification of the buckle known from D1 according to the teaching of Claim 1, the Board is convinced that the subject-matter of Claim 1 does not follow plainly

and logically from the prior art illustrated by D1 to D4 but involves an inventive step within the meaning of Article 56 EPC.

7. Consequently, a patent can be granted based on the last amended version filed by the appellant.

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 based on the following documents:
 - Claim 1 filed with the fax of 19 October 2001 and claims 2 and 3 filed with the letter dated 16 October 2001.
 - Description: pages 1 and 2 filed with the letter of 16 October 2001 and revised pages 7 to 24 filed with letter of 25 September 2001 to be renumbered 3 to 20.
 - Drawings: Figures 1 to 9 as filed on 5 October 2000.

The Registrar:

The Chairman:

G. Magouliotis

C. Andries