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D E C I S I O N
of 5 March 2001

Case Number: T 1009/99 - 3.2.4

Application Number: 93112189.1

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Title of invention:
Sorting apparatus

Patentee:
TOYOKANETSU KABUSHIKI KAISHA

Opponent:
Daifuku Co., Ltd.

Headword:
Sorting apparatus

Relevant legal provisions:
EPC Art. 56

Keyword:
"Inventive step - yes"

Decisions cited:
T 0056/87

Catchword:
-



Case Number: T 1009/99 - 3.2.4

D E C I S I O N
of the Technical Board of Appeal 3.2.4
of 5 March 2001

Appellant: Daifuku Co., Ltd
(Opponent) Osaka 555 (JP)

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Respondent: TOYOKANETSU KABUSHIKI KAISHA
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Decision under appeal: Interlocutory decision of the Opposition Division
of the European Patent Office posted 31 August
1999 concerning maintenance of European patent
No. 0 581 291 in amended form.

Composition of the Board:

Chairman: C. A. J. Andries
Members: R. E. Gryc
H. Preglau

Summary of Facts and Submissions

I. The appellant (opponent) lodged an appeal, received at the EPO on 29 October 1999, against the interlocutory decision of the Opposition Division, dispatched on 31 August 1999, which maintained the patent EP 0 581 291 in an amended form. The appeal fee was paid simultaneously and the statement setting out the grounds of appeal was received at the EPO on 27 December 1999.

II. Opposition was filed against the patent as a whole and based on the ground of lack of inventive step (Article 100(a) EPC) in particular with respect to the teachings of the following documents:

D1: US-A-3 731 782

D3: US-A-5 038 912.

The Opposition Division held that said ground for opposition did not prejudice the maintenance of the patent in the amended version submitted by the respondent (patentee).

III. In his statement setting out the grounds of appeal, the appellant contended that the technical solution offered by claim 1 provided no more advantages than the state of the art so that the object of the invention could not support the patent and that the subject-matter of Claim 1 lacked an inventive step with respect to the teachings of documents D3 and D1.

The appellant conceded that the subject matter of claim 1 differs with respect to the sorting apparatus

of D3 in that the projecting members were directly attracted by magnetic force. Nevertheless, he pointed out that to divert projecting members by using the magnetic force of an electromagnetic coil was already known from D3 and that, to attract projecting members directly by a magnetic force, was also already known from D1. Therefore, in his opinion, since D1 and D3 both refer to the same technical field, the person skilled in the art would have known both the magnetic and the mechanical solutions and, since magnet means were cheap and did not involve moving components, the skilled person would be inclined to preferably use such means. He concluded therefore that to replace mechanical means by magnet means was obvious because reducing costs in manufacturing and maintenance was a general hint.

The appellant contended also that the way of attracting the projecting members/rollers in a guide rail of a change-over device was the same in both the opposed patent and D1 and that it was obvious to arrange the magnet means on that guide rail to which the projecting member shall be diverted. Moreover, he pointed out that the feature of laterally offsetting the common junction area of guiding rails from the central axis was already clearly disclosed in Figure 3 of D3. In summary, the appellant considered that the solution according to the invention was not supported by the object of the invention and that, with the exception of the special magnet means already known from D1, all features of claim 1 on file were known from D3. Since, moreover, D1 and D3 referred to sorting devices of the same type, he was of the opinion that using the magnet means of D1 on a device according to D3 was not inventive.

In reply the respondent (patentee) contradicted the appellant's contentions.

IV. Oral proceedings took place on 5 March 2001.

With letter dated 16 February 2001 the appellant has informed the Board that he would not attend the oral proceedings and, although duly summoned to the audience, he indeed was not present. In accordance with the provisions of Rule 71(2) EPC, the proceedings were continued without the party involved.

The respondent filed a new set of claims and a description and drawings amended correspondingly in particular to take into account the appellant's written objections.

As regards inventive step, the respondent drew the attention of the Board to the fact that the sorting apparatus disclosed in D3 comprised neither a magnet means nor guide rails having two side walls so that, starting from said closest state of the art, the skilled person wishing to arrive at the invention should have to completely rebuild the known device. The respondent also pointed out that, in order to reduce noise, D3 proposed a completely different solution (i.e. to use rubber material) as the one adopted in Claim 1 and that, in the apparatus according to the invention, the guiding ways for the projecting members all remain open and free whereas, in D3, a guide way is necessarily closed for sorting. Moreover, according to the invention, the projecting members could not escape from between the two side walls of the rails and there is no need to permanently attract them along a rail contrarily to the guiding disclosed in D1, or D3.

Therefore, the respondent was of the opinion that the subject-matter of Claim 1 on file involved an inventive step.

V. Requests:

- For the appellant: It was noted that the appellant had requested in writing that the decision under appeal be set aside and that the patent be revoked.
- For the respondent: At the end of the oral proceedings, the respondent requested to cancel the decision under appeal and to maintain the patent on the basis of the documents submitted in the oral proceedings.

VI. Claim 1 reads as follows:

"Slat conveyor type sorting apparatus comprising a change-over device, a plurality of slats (102) arranged side by side to form a conveying surface on which articles (X) are loaded, drive means (108) for moving said slats in a direction substantially perpendicular to a longitudinal direction of said slats (102) to convey said articles (X) together with said slats and moving shoes (104) mounted on corresponding slats (102) and movable in said longitudinal direction for sorting said articles (X), said change-over device comprising: a projecting member (106) protruding from each of said moving shoes (104) below said conveying surface; first, second and third guide rails (122, 124, 122) each having two side walls and being installed below and substantially parallel with respect to said conveying surface for guiding said projecting member

(106) together with said moving shoe (104) when said slats (102) are moved by said drive means (108), wherein said second and third guide rails (124, 122) branch from said first guide rail (122) such that said projecting member (106) moving along said first guide rail (122) is selectively introduced into said second rail (124) or said third rail (122), and a magnet means (250, 250'), which is actuated for attracting said ferromagnetic projecting member (106) by means of a magnetic force toward said second guide rail (124), said magnet means is provided at a first side wall (130; Fig. 15: 130a) of said second guide rail, said magnet means including a yoke (280) forming a closed loop of magnetic flux generated by said magnet means (213, 250', 250) when being in contact with said projecting member (106), and wherein said first guide rail (122) defines a central axis and said second (124) and third (122) guide rails include respective further side walls (Fig. 27: 130b) which are jointed together at a common junction area and wherein said common junction area is laterally deviated from said central axis."

Reasons for the Decision

1. *Admissibility*

The appeal is admissible.

2. *Modifications (Article 123 EPC)*

2.1 Claim 1

The designation of the subject-matter of the invention

as granted (see the specification, column 33), namely "A change-over device adapted in a slat conveyor type (100) sorting apparatus" has been modified to read: "Slat conveyor type sorting apparatus comprising a change-over device".

The wording of the initial designation, in particular the expression "adapted in", did not make it absolutely clear that the invention did not relate to a change-over device per se but to a combination of a change-over device with components (e.g. projecting members) of a slat conveyor type sorting apparatus, said components being apparently also parts of the device so that the device could not be considered in isolation. The new designation avoids such ambiguity and makes clear that the claimed invention concerns the combination of components constituting the "sorting apparatus".

The following indication: "for sorting said articles (X)" has been inserted between the words "direction" and "said" in line 12 of column 33 of the specification. This indication specifies the function of the moving shoes as described, for example, on page 21, lines 2 to 8 of the application as originally filed.

With respect to Claim 1 as granted (see the specification, column 33, lines 19, 25 and 29), a third guide rail and two side walls for each rail have been added. Supports can be found, for example, in Claim 1 and in the Figures 4 to 6, 12, 13, 27, 33 to 37, 42, 44, 46 and 47 and their corresponding part of the description of the application as originally filed.

In line 30 of column 33, the term "selectively" , which was redundant with the same term used on line 28 for qualifying the introduction of the projecting member into the second or third rail, has been deleted.

In line 31 of Claim 1 as granted, the word "ferromagnetic" has been introduced before the terms "projecting member" in order to indicate unequivocally the nature of the material of said members. A support can be found on page 30, line 13 of the application as originally filed.

The apparatus claimed in Claim 1 appearing as a complex system of functionally interrelated parts and the invention lying in changes of their forms and inter-relationships, the Board has considered that the expression "characterized in that" of the claim (see line 33) was inappropriate. Since, moreover, several features of the precharacterising portion of Claim 1 were not found in the apparatuses of the more relevant prior art documents, such an optional expression (which anyhow does not change the scope of the claim) would give a distorted and misleading picture of the invention. Therefore, that expression was deleted.

In line 34 of column 33 of the specification, the word "on" has been replaced by the following member of phrase: "at a first side wall (130; Fig 15: 130a) of". This modification must be considered in combination with the introduction of the term "further" between the words "respective" and "side walls" of the text of Claim 12 as granted (column 34, line 56) added at the end of Claim 1 as granted. These modifications permit to clarify that the magnet means is not positioned on the side wall of the second guide rail which is jointed

together with a side wall of the third guide rail but on the opposite side wall of said second guide rail. A support can be found in the description of the Figures 4 to 6 and 27 of the application as originally filed.

The above mentioned modifications, which clarify the subject-matter of Claim 1 and restrict the protection conferred by the opposed patent, are all supported by the whole content (i.e. description, claims and drawings) of the application as originally filed. Therefore the requirements of Article 123 EPC are satisfied and the modifications are allowable.

2.2 Description and drawings

Description and drawings have been adapted to the new claim 1. Parts of the description concerning various embodiments not entirely covered by the wording of the new Claim 1 and also their corresponding figures have been deleted for clarification purpose. These modifications also satisfy the requirements of Article 123 EPC and are allowable.

3. *Interpretation of claim 1*

The following statements of Claim 1

- "guide rails each having two side walls", "said projecting member ...is selectively introduced into said second guide rail", and "said first guide rail defines a central axis" on the one hand and
- "a magnet means (250, 250'), actuated for

attracting saidmember (106) toward
said second guide rail " on the other hand,

should be interpreted as implicit indications of the fact that the rails having two side members enclose the projecting members to both sides of the rails so that these members are forced to follow the longitudinal direction of the rails and that the function of the magnet means is solely to deviate the projecting members from the axis of the first rail toward the second rail and not to magnetically retain them for subsequent deflecting movement along the diverging path, said subsequent deflecting function being ensured mechanically by the side walls of the second rail.

4. *Novelty (Article 54 EPC)*

Neither D1 nor D3 teaches to guide the projecting members of moving shoes by two side walls along the portions of the guiding rails joining the diverting areas and none of the other documents cited during the proceedings discloses a sorting apparatus comprising in combination all the features stated in Claim 1.

Since moreover novelty has not been disputed by the appellant, there is no need for further detailed substantiation and the subject-matter as set forth in claim 1 is considered as novel within the meaning of Article 54 EPC.

5. *The closest states of the art*

Each of the apparatuses disclosed by D1 and D3 can be considered as the closest to the apparatus claimed in Claim 1.

5.1 If the sorting apparatus of D1 is taken as the starting point, the subject-matter of Claim 1 differs therefrom in that:

- the second and third guide rails both have two side walls so that the projecting members can be introduced into the rails,
- the second and third guide rails include respective side walls which are jointed together at a common junction area and,
- said common junction area is laterally deviated from the central axis defined by the first guide rail.

5.2 If the sorting apparatus of D3 is taken as the starting point, the subject-matter of Claim 1 differs therefrom in that:

- every guide rail has two side walls so that the projecting members can be introduced into the rails,
- a magnet means is provided at a first side wall of the second guide rail for magnetically attracting the projecting member toward said rail, said magnet means including a yoke forming a closed loop of magnetic flux generated by said magnet means when being in contact with the projecting member,
- the first guide rail defines a central axis, and
- the common junction area of the side walls of the

second and third guide rails is laterally deviated from said central axis.

It is true that in Figures 3 and 6 of D3 the diverter gate 17 has in its housing aligned openings 35, 36 which form a passage through the housing aligned with the shoe guideway 15 for the depending pins 23 of the shoes. This passage is part of the shoe guideway. However, these small openings 35, 36 forming a passage cannot be considered as corresponding to the first and third guide rail in the meaning of the present invention, since although these openings form part of the shoe guideway, that shoe guideway is completely different.

6. *The corresponding problems to be solved*

6.1 Starting from the apparatus of D1 and taking into account that, according to the invention, the diverging elongate permanent magnets of D1 (used as guide surfaces for guiding the projecting members along the complete path of the conveyor) have been replaced by guiding rails each having two guide walls, the Board sees the problem as being to simplify the known sorting apparatus of D1 and to reduce the corresponding manufacturing costs (see the specification, column 4, lines 45 to 47).

6.2 If the apparatus of D3 is considered as the closest state of the art and taking into account that the pivotable diverter gate of said apparatus and its relatively complicated electro-mechanical diverting mechanism have been replaced by a simple magnet means and two side walls guiding rails, the Board sees the problem as being not only to simplify the change-over

mechanism known from D3 in order to reduce the costs but also to reduce the noise in changing the conveying path (see the specification, column 4, lines 41 to 47).

7. *Inventive step (Article 56 EPC)*

7.1 According to the interpretation of Claim 1 (see section 3 above), the function of the magnet means of the apparatus according to the invention is solely to attract the projecting members first toward the second guide rail for selectively introducing them into the rail without bumping against a deflecting wall, and such that the projecting members can subsequently be mechanically deflected by the side walls of said rail.

7.2 The apparatus according to D1 is based on a different conception i.e. the function of deflecting the projecting members subsequently is carried out by elongated permanent magnets which retain said members magnetically along the diverging path. D1 focussed on the magnetic problem occurring during transfer of the moving elements between the electromagnets used for diverging and said elongated permanent magnets used for subsequently guiding the projecting members. The teaching of D1 is thus fully oriented toward the use of magnetic forces, both for sorting and for subsequent deflection of the moving element.

7.3 On the contrary, D3 is totally oriented toward mechanical solutions comprising the interposition of positive obstacles in the path of the conveyor, both for sorting the projecting members (i.e. by means of a pivotable gate) and for the subsequent deflection of said members (i.e. by means of a diverter wall obliquely oriented relative to the conveyor path).

7.4 Therefore, the skilled person starting from D1 and willing to improve its fully magnetic type sorting system would have a priori no reason for consulting D3 which refers to purely mechanical solutions.

Assuming nevertheless that he would do that, but keeping in mind that it is not justified arbitrarily to isolate parts of a prior art document from their context in order to derive therefrom technical information which would differ from the integral teaching of that document (see decision T 56/87, OJ EPO 1990, 188), the Board also cannot see any reason why the skilled person would additionally envisage:

- firstly, to isolate the obliquely oriented guiding rail of D3 from its associated pivotable gate;
- secondly, to modify the structures of both the downstream guide rails so that they would comprise each two side walls with a common junction area between the inner walls, although none of the relevant documents D1 and D3 discloses such a feature, and,
- thirdly, to laterally deviate said junction area from the central axis of the upstream guiding rail.

7.5 To arrive at a combination according to Claim 1 the skilled person would thus need not only to make an arbitrary choice of specific parts of D3 but also to adapt and combine them to existing parts of an other apparatus based on a different conception and working in an opposite way (i.e. in D3 the moving elements are pushed mechanically to the path of the conveyor

whereas, in D1, they are attracted magnetically). Without any hint, such an approach appears to be merely the result of an ex-post-facto analysis.

- 7.6 The same argumentation remains valid with the skilled person starting from the apparatus of D3. Furthermore, it should be pointed out that, in D3, elimination of excess noise was considered as an important factor and a solution different to that according to the invention was already proposed (see D3: column 5, lines 10 to 16). Even if the skilled person would consult D1, which relates to an apparatus based on a fully different conception, he would not arrive at the invention by a mere transposition of the disclosed attracting means of D1 in place of the pivotable diverting gate of D3 since several additional adaptations of the guiding rails would also be necessary.
8. For the foregoing reasons, the Board cannot consider that the combination claimed in Claim 1 follows plainly and logically from the state of the art disclosed either in D1 or in D3 and the claimed invention therefore involves an inventive step in the meaning of Article 56 EPC.

Therefore, the objections raised by the appellant do not prejudice the maintenance of the patent in the amended version submitted by the respondent at the oral proceedings.

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:

Claims: 1 to 15,

Description: columns 1 to 5 and pages 15 to 29, 33 to 61 and 72,

Drawings: 1 to 34,

all filed during the oral proceedings.

The Registrar:

The Chairman:

G. Magouliotis

C. Andries