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File Number: T 243/91 - 3.2.4

Application No.: 85 309 178.3

Publication No.: 0 185 541

Title of invention: A screw conveyor

Classification: B65G 33/14, A21C 1/14

D E C I S I O N
of 24 July 1991

Applicant: Rheon Automatic Machinery Co. Ltd.

Headword:

EPC Article 84 EPC

Keyword: "Technical feature essential to invention (no)" - "Remittal to
Examining Division"

Headnote



Case Number : T 243/91 - 3.2.4

D E C I S I O N
of the Technical Board of Appeal 3.2.4
of 24 July 1991

Appellant : RHEON AUTOMATIC MACHINERY CO. LTD.
2-3, Nozawa-machi
Utsunomiya-shi Tochigi-ken (JP)

Representative : Leale, Robin George et al
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Decision under appeal : Decision of Examining Division 2.3.08.083 of the
European Patent Office dispatched on
5 November 1990 refusing European patent
application No. 85 309 178.3 pursuant to Article
97(1) EPC.

Composition of the Board :

Chairman : C. Andries
Members : M. Hatherly
J.-P. Seitz

Summary of Facts and Submissions

- I. European patent application no. 85 309 178.3, filed on 17 December 1985, was refused by an Examining Division decision dispatched on 5 November 1990.

The decision was based on Claims 1 to 4 filed with the letter of 12 September 1990.

- II. The reason given for the refusal was that not all the technical features essential to the invention had been included in Claim 1, reference being made to Article 84 in combination with Rule 29(1) and (3) EPC.

The Examining Division argues that the lacking essential feature is a definition of the arms to the extent that the skilled man has the information in the Claim that a gap is present which allows passage of material therethrough. The guide means 10 must extend into the body of the device (i.e. to the left in Fig. 1) to such an extent that the vane 7 can be guided into the roller after having passed through the material and to avoid jamming of the vane. Thus the guide means must extend beyond the quarter-circular portion (see e.g. Figs. 1, 3(A), 4 and 5). Accordingly, unless a gap is present, the material is prevented from being propelled into the screw and the device is not operable to push the material into the screw as required by Claim 1. There is no indication in the application how the material could be propelled into the screw without a gap being present.

The Examining Division maintains moreover that provision of a gap would not be implicitly understood by the skilled man because in the closest prior art:

D1: US-A-4 167 237

(see Figs. 6 and 7) no gap is present or necessary since the propelling element extends beyond the guide means.

- III. On 7 January 1991 the Appellant lodged an appeal against the above decision, paying the appeal fee simultaneously. He filed a facsimile Statement of Grounds on 6 March 1991, confirmation being received on 11 March 1991.
- IV. In response to a communication of the Board, the Appellant filed new Claims 1 to 4 and a new page 2 of the description by letter of 14 June 1991.
- V. The version of the application presently on file for the main request is:

Claims 1 to 4 filed by letter of 14 June 1991.

Description:

- Pages 1, 5 and 6 filed by letter of 9 May 1988
- Page 2 filed by letter of 14 June 1991
- Page 2a filed by letter of 12 September 1990
- Pages 3 and 4 as published

Drawings sheets 1/5 to 5/5 as published

- VI. Claim 1 of the main request now reads as follows:

"A screw conveyor comprising a housing (14), a hopper (1) mounted on the housing, at least one screw (2) horizontally disposed in the housing, the housing being provided with an outlet (4) at the delivery end of the

screw, and a propelling device disposed in the housing and operable to push material into the screw, characterised in that the propelling device comprises at least one driven roller (5) extending horizontally above the screw and adjacent a wall of the housing, guide means (10) provided on a wall of the housing, at least one vane (7) received slidably in at least one slot (6) extending longitudinally of the said roller, the vane extending across the circular cross-section of the roller and being longer in that direction than the diameter of the roller, and the said guide means being arranged, during rotation of the said roller, to act on the said vane to cause one edge of the vane to protrude progressively further, up to a maximum, from the surface of the roller as that edge of the vane passes through a material being fed to the conveyor."

VII. With the Statement of Grounds of 6 March 1991 the Appellant presented an auxiliary request comprising Claim 1 consisting of Claim 1 in its version as refused supplemented by the words "the said parts of the guide means including two laterally spaced arms with a gap therebetween for the passage of material". Claims 2 to 4 as refused followed this Claim 1.

VIII. The Appellant requests cancellation of the decision and the grant of a patent on the basis of documents as defined above in sections V and VII (main and auxiliary requests).

Reasons for the Decision

1. The appeal is admissible.

2. Amendments

2.1 The present Claim 1 of the main request includes all the features of the original independent Claim 5 and the following features:

- the propelling device is disposed in the housing - the basis is the original Figs. 1, 2 and 4;
- guide means are provided on a wall of the housing - the basis is the original Claim 1, lines 12 and 13, wherein the widening of the term "guide member" to "guide means" is allowable in view of the latter term being used in the original Claim 5, page 9, line 6;
- the vane is crosswise longer than the roller diameter - the basis is the original page 4, lines 13 and 14, and the original Figures;
- the wording "the said guide means ... fed to the conveyor" in lines 17 to 22 - this is a clarification of the original claim 5, page 9, lines 6 to 10. That the guide means acts on the vane to cause one edge to protrude progressively further from the roller is based on the original description page 2, line 35 to page 3, line 1, and the original Figures.

2.2 The present Claim 1 of the main request therefore does not contravene Article 123(2) EPC.

3. Essential technical feature

The question to be answered is whether the feature that the arms of the guide means have a particular form in order to provide a gap for passage of material to the screw is to be considered as an essential technical feature, which if so would have to be present in the independent Claim 1.

4. Problem

- 4.1 In order to be able to answer the question put forward in section 3 above, the problem to be solved in this application should be considered.
- 4.2 The existence of the so-called "bridge phenomenon" is known in this technical field, as are satisfactory working solutions. Indeed the pusher assemblies according to document D1 contribute to solve such a kind of problem. However the feeder of document D1 requires a fairly complex operating mechanism, resulting in high production costs.
- 4.3 The problem to be solved is therefore to provide a screw conveyor which avoids with a relatively simple operating mechanism the so-called "bridge phenomenon" as well as the adherence of the plastic material to the walls of the hopper.
- 4.4 In the application as originally filed it was made clear that in order to solve the indicated problem a propelling device is used, disposed in the housing between hopper and screw(s).

This propelling device, comprising at least one driven roller, at least one vane, and a guide member (original Claim 1) or guide means (original Claim 5) for this (these) vane(s), has to be considered as such a simple operating mechanism solving the problem. Of these elements forming the propelling device, it is apparent (see original page 6, lines 26 to 33) that the vanes are the basic elements.

5. The function of the guide member or guide means is to act on the vane so that one edge of the vane protrudes from the driven roller.
- 5.1 A person skilled in the art knows of vane-type machines (pumps or motors) and the numerous different possibilities of actuating vanes.
- 5.2 In the view of the Board, the originally filed application also made it clear for a person skilled in the art that different guiding members or means could be used. In the preferred embodiments (cf. page 3, lines 21-23: by way of example) according to Figures 1 and 2, to Figure 3A, or to Figure 4 the guide member has an arcuate face and two arms. Furthermore it was also clear that a guide member with an arcuate face and at least one arm was sufficient (page 2, lines 9 to 12 and 27 to 30; Claim 1). Claim 5 even defined the presence of guide means without specifying a constructional embodiment.
- 5.3 The function of these guide means is however clear from the wording of original Claim 5. Such a functional feature is allowable if that feature provides a clear instruction to a skilled person to reduce it to practice without undue burden.
- 5.4 In this specific case, it is clear that various vane guide means can be contemplated, as are commonly known in vane-pumps, e.g. vane guiding grooves in the housing co-operating with a part of the vane, so that it is not difficult for a skilled design engineer to find an appropriate construction fulfilling the indicated function.

- 5.5 The Board thus considers it clear that the specific feature put forward by the Examining Division cannot be considered as an essential feature, but as one out of a number of possible and known embodiments fulfilling that function.

Furthermore, according to the Board, even if two arms are used as part of the guide member, it is clear by the wording itself that these two arms are two separate elements. The presence of these two separate elements, taking into account their technical function, can only lead a person skilled in the art, in order to arrive at a normal technically meaningful configuration, to put them separately into the apparatus which means that implicitly there has to be a gap.

The Board therefore cannot agree with the impugned decision and therefore must set it aside.

- 5.6 It is observed that for a person skilled in the art recognising the technical sense of the moving vanes, which are analogous with the pusher members 11,21,31 according to document D1, it is implicit that the vanes are active in the area connecting the hopper with the screw(s) to push the material into the screw(s).
6. The impugned decision concerns only whether a certain technical feature is essential and the Examining Division has not yet had the opportunity to consider the present Claim 1 regarding novelty and inventive step. Thus the Board considers it appropriate to remit the case in accordance with Article 111(1) EPC to the Examining Division for further prosecution, particularly since the Appellant did not object in his letter of 14 June 1991 to the intention of remittal expressed by the Board in its communication.

7. Remittal on the basis of Claim 1 of the main request satisfies the Appellant's request to cancel the decision. His auxiliary request does not need to be considered.

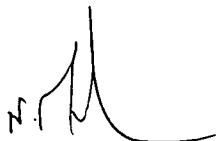
Order

For these reasons, it is decided that:

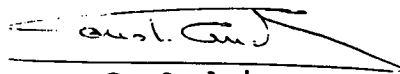
1. The decision under appeal is set aside.
2. The case is remitted to the Examining Division with the order to continue the examination on the basis of the documents specified in section V above.

The Registrar:

The Chairman:



N. Maslin



C. Andries

