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**D E C I S I O N**  
**of 16 April 2002**

**Case Number:** T 0983/00 - 3.2.1

**Application Number:** 96109415.8

**Publication Number:** 0749930

**IPC:** B66B 11/00

**Language of the proceedings:** EN

**Title of invention:**  
Traction sheave elevator

**Applicant:**  
Kone Corporation

**Opponent:**  
-

**Headword:**  
-

**Relevant legal provisions:**  
EPC Art. 56

**Keyword:**  
"Inventive step (yes, after amendment)"

**Decisions cited:**  
-

**Catchword:**  
-



Case Number: T 0983/00 - 3.2.1

**D E C I S I O N**  
**of the Technical Board of Appeal 3.2.1**  
**of 16 April 2002**

**Appellant:** Kone Corporation  
Munkkiniemen Puistotie 25  
FI-00330 Helsinki (FI)

**Representative:** Zipse + Habersack  
Wotanstrasse 64  
D-80639 München (DE)

**Decision under appeal:** Decision of the Examining Division of the  
European Patent Office posted 2 May 2000 refusing  
European patent application No. 96 109 415.8  
pursuant to Article 97(1) EPC.

**Composition of the Board:**

**Chairman:** F. Gumbel  
**Members:** S. Crane  
G. Weiss

## Summary of Facts and Submissions

I. European patent application No. 96 109 415.8 was refused by a decision of the Examining Division posted on 2 May 2000.

The reason given for the decision was that the subject-matter of claim 1 then on file lacked inventive step with respect to the following prior art documents:

(D1) EP-A-0 415 218

(D2) EP-A-0 631 968

(D3) EP-A-0 631 967.

II: A notice of appeal against this decision was filed on 8 May 2000 and the fee for appeal paid on 31 May 2000.

The statement of grounds of appeal was received on 8 September 2000.

III. In a communication pursuant to Article 11(2) RPBA posted on 14 September 2001 the Board indicated that in its provisional opinion the closest state of the art was to be found in the publication "The Hitachi Hyoron" 1993, vol. 75, No. 7 (D4), originally introduced into the examination proceedings by way of a third party intervention.

Starting from this and having regard to documents D1, D3 and EP-A-375 208 (D5), the latter also stemming from the same third party intervention, it was difficult to see where the inventive step of the claimed subject-matter was supposed to reside.

IV. Oral proceedings before the Board were held on 16 April 2002.

At the oral proceedings the appellants (applicants) submitted a new set of claims 1 to 6 and amended description pages 1 to 8 on the basis of which, together with the drawings as originally filed, they requested the grant of a patent.

New claim 1 reads as follows:

"Traction sheave elevator in which the drive machinery (6,106) with the traction sheave (7,107) is placed in the elevator shaft (15) and the hoisting ropes (3,103) go upward from the traction sheave (7,107), whereby in the horizontal cross-section of the elevator shaft, the vertical projections of the elevator car (1,101), counterweight (2,102) and the traction sheave (7,107) of the drive machinery are separate from each other, and whereby the vertical projections of the elevator car (1,101), counterweight (2,102) and the drive machinery (6,106) are separate from each other characterized in that the drive machinery is of a flat construction in the direction of the axis of rotation of the traction sheave, so as to fit in the gap between car (1,101) and shaft wall, required by the counterweight, that the ropes are passed from the traction sheave (7,107) to the counterweight (2,102) and elevator car (1,101) via diverting pulleys (4,5;104,105) which are located parallel to each other and to one adjacent shaft wall, whereby the diverting pulleys are located one over the other, whereby the upper pulley has a larger diameter than the lower one or the diverting pulleys are arranged coaxially."

Dependent claims 2 to 6 relate to preferred embodiments

of the elevator according to claim 1.

The appellants argued that the person skilled in the art would not be led to incorporate flat drive machinery into the elevator disclosed in document D4 as this elevator was a low speed, low power system for incorporation into private accommodation, whereas flat drive machinery had been developed exclusively for high power applications in tall office buildings and the like, and in any case in view of the particular configuration employed in the elevator of document D4 there would be no reduction in shaft cross-section to be achieved with flat drive machinery. Furthermore, the particular space-saving arrangements of diverting pulleys as stated in claim 1 had no counterpart in the state of the art.

### **Reasons for the Decision**

1. The appeal complies with the formal requirements of Articles 106 to 108 and Rules 1(1) and 64 EPC. It is therefore admissible.
2. Present claim 1 comprises in essence a combination of original claims 1 and 2 together with the first feature of original claim 3 and, as alternatives, details of the layout of the ropes and diverting pulleys disclosed with respect to the embodiment of Figure 1 on the one hand and the embodiment of Figure 3 on the other.

Present dependent claim 2 contains the second feature of original claim 3 and dependent claims 3 to 6 correspond to original claims 4 to 7.

The description has been amended to reflect the closest state of the art and to adapt it to the terms of the new claims.

The amended documents are thus not objectionable under Article 123(2) EPC.

3. Document D4 relates to a home elevator unit with conventional traction sheave drive machinery which, to save space, is positioned within the shaft, more particularly besides the lower end of the space required for movement of the counterweight. The axis of the traction sheave extends parallel to the shaft wall to which it is adjacent, as does the axis of the diverting pulley for the rope passing to the elevator car. The axis of the diverting pulley for the rope passing to the counterweight extends perpendicularly to the adjacent shaft wall, ie perpendicularly to the axis of the other diverting pulley.

Documents D2 and D3 both relate to elevators in which, to improve the utilisation of building space, the traction sheave drive machinery is placed within the elevator shaft (at the upper end in document D3, at the lower end in document D2). In both cases the drive machinery is of flat construction with its sheave arranged parallel to the shaft wall to which it is adjacent. In the arrangement of document D3 the ropes can pass directly to the elevator car and the counterweight without the need for diverting pulleys, in the arrangement of document D2 on the other hand the axes of the diverting pulleys corresponds to that described above with respect to document D4.

Documents D1 and D5 concern elevator arrangements

wherein, in a conventional manner, the drive machinery is located in a machine room external to the lower end of the shaft. In both cases the ropes passing to the elevator car and the counterweight go over respective diverting pulleys which are located alongside each other on spaced axes at the same height.

Even if the person skilled in the art would recognise, in the light of documents D2 and D3, that he could achieve further space saving in the elevator unit of document D4 by employing suitably scaled flat drive machinery arranged with its traction sheave parallel to the adjacent shaft wall, it is apparent from the above that there is nothing in the cited prior art documents which could lead him to either of the particular configurations of diverting pulleys defined in present claim, both of which enable the use of advantageous roping layouts. The subject-matter of claim 1 cannot therefore be derived in an obvious manner from the state of the art and accordingly involves an inventive step (Article 56 EPC).

## **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 with the following documents:
  - claims 1 to 6 and description pages 1 to 8 presented at the oral proceedings;

- drawings as originally filed.

The Registrar:

The Chairman:

S. Fabiani

F. Gumbel