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Datasheet for the decision of 4 June 2024

Case Number: T 0105/22 - 3.2.06

Application Number: 14806050.2

Publication Number: 3194317

IPC: B66B5/04

Language of the proceedings: EN

Title of invention:
CAR MOUNTED GOVERNOR FOR AN ELEVATOR SYSTEM

Patent Proprietor:
Otis Elevator Company

Opponent:
KONE Corporation

Headword:

Relevant legal provisions:
EPC Art. 56, 100(a)

Keyword:
Inventive step - main request (no), 1st auxiliary request (no), 2nd auxiliary request (yes)

Decisions cited:

Catchword:

Europäisches Patentamt
European Patent Office
Office européen des brevets

Beschwerdekammern

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Case Number: T 0105/22 - 3.2.06

D E C I S I O N
of Technical Board of Appeal 3.2.06
of 4 June 2024

Appellant: (Opponent)	KONE Corporation Kartanontie 1 00330 Helsinki (FI)
Representative:	K & H Bonapat Patentanwälte Koch · von Behren & Partner mbB Donnersbergerstraße 22A 80634 München (DE)
Respondent: (Patent Proprietor)	Otis Elevator Company One Carrier Place Farmington CT 06032 (US)
Representative:	Schmitt-Nilson Schraud Waibel Wohlfrom Patentanwälte Partnerschaft mbB Pelkovenstraße 143 80992 München (DE)
Decision under appeal:	**Decision of the Opposition Division of the European Patent Office posted on 18 November 2021 rejecting the opposition filed against European patent No. 3194317 pursuant to Article 101(2) EPC.**

Composition of the Board:

Chairman	T. Rosenblatt
Members:	M. Hannam
	D. Prietzel-Funk

Summary of Facts and Submissions

I. An appeal was filed by the appellant (opponent) against the decision of the opposition division rejecting the opposition to European patent No. 3 194 317.

II. Together with its reply to the statement setting out the grounds of appeal, the respondent (patent proprietor) submitted two sets of amended claims according to 1st and 2nd auxiliary requests.

III. The following documents are relevant to the present decision:

E1 DE 1 936 579
E2 EP 1 870 368 A1

IV. The Board issued a summons to oral proceedings and subsequently a communication containing its provisional opinion, in which it indicated *inter alia* that the subject-matter of claim 1 of both the main request (claims as granted) and the 1st auxiliary request seemed not to involve an inventive step whilst the presence of an inventive step in the subject-matter of claim 1 of the 2nd auxiliary request may require discussion at oral proceedings.

V. The appellant requested that the decision under appeal be set aside and the patent be revoked.

The respondent requested that the appeal be dismissed, or that the patent be maintained in amended form based on the 1st or the 2nd auxiliary request submitted with the reply to the statement setting out the grounds of

appeal.

VI. Claim 1 of the main request reads as follows (with alphabetic feature annotation as used by the opposition division in its decision, see pages 2/3):

a) A car mounted governor (34) for an elevator system (10) comprising:
b) an overspeed pulley (38) configured to be secured to an elevator car (12) of an elevator system (10), the overspeed pulley (38) configured to detect an overspeed condition of the elevator car (12)
c) via a rate at which a governor cable (42) passes around the overspeed pulley (38); and
d) a free pulley (40) configured to be secured to the elevator car (12),
e) the governor cable (42) routed around the free pulley (40);
characterized by
f) a tensioning device (64) disposed at the free pulley (40) and operably connected thereto to maintain a select tension on the governor cable (42);
g) the governor (34) being accessible from inside of the elevator car (12).

Claim 1 of the 1st auxiliary request reads as for claim 1 of the main request with the following feature appended:

"the tensioning device (64) comprising:
a movable mounting location for the free pulley (40);
a biasing member (64) operably connected to the free pulley (40) to bias a location of the free pulley (40) to maintain the select tension on the governor cable (42)."

Claim 1 of the 2nd auxiliary request reads as for claim 1 of the 1st auxiliary request with the following feature further appended:

"wherein the biasing member (64) is a tension weight (64) fixed to the free pulley (40)."

Claim 5 of the 2nd auxiliary request reads as follows:

"An elevator system (10) comprising:
a hoistway (14);
an elevator car (12) suspending in the hoistway (14) via a suspension member (16);
a governor cable (42) suspended in the hoistway (14); and
a governor assembly (34) fixed to the elevator car (12) including:
an overspeed pulley (38) configured to detect an overspeed condition of the elevator car (12) travel in the hoistway (14) via a rate at which the governor cable (42) passes around over the overspeed pulley (38); and
a free pulley (40) secured to the elevator car (12), the governor cable (42) routed around the free pulley (40);
characterized by
a tensioning device disposed at the free pulley (40) and operably connected thereto to maintain a select tension on the governor cable (42); and
the governor (34) being accessible from inside of the elevator car (12); and
the tensioning device comprising:
a movable mounting location for the free pulley (40);
a biasing member (64) operably connected to the free pulley (40) to bias a location of the free pulley (40) to maintain the select tension on the governor cable

(42);
wherein the biasing member (64) is a tension weight (64) fixed to the free pulley."

VII. The appellant's arguments may be summarised as follows:

Main request

The subject-matter of claim 1 lacked an inventive step. Feature a) to feature e) were known from E1. Features f) and g) lacked a technical relationship and so had to be considered separately. For feature f) the problem could be seen as 'how to maintain a select tension of the governor rope'. The spring 16 of E2 at least assisted in maintaining a particular tension which would guide the skilled person to insert a spring between pulleys 2 and 6 of E1 in order to solve the posed problem. No spring dimension was claimed such that this could not dissuade the skilled person from adopting the teaching of E2. Feature g) was not of a technical nature and, even if it were considered in justification of an inventive step, was obvious to the skilled person.

1st auxiliary request

The subject-matter of claim 1 lacked an inventive step for essentially the same reasons as claim 1 of the main request.

2nd auxiliary request

E1 disclosed a weight included in the elevator system such that the alternative of providing a weight generating the tension rather than a spring could not permit an inventive step to be recognised in claim 1,

not least since col. 4, lines 20 to 24 of the patent considered a weight equivalent to a spring. In fact the use of a weight was a disadvantage over the use of a spring, such that this could also not support the recognition of an inventive step. The same applied to independent claim 5.

VIII. The respondent's arguments may be summarised as follows:

Main request

The subject-matter of claim 1 involved an inventive step. When starting from E1, this failed to disclose features f) and g) of claim 1, yet the objective problem required features d), e), f) and g) to be considered in combination, since these worked together to provide a specific technical effect, namely 'to facilitate maintenance and repair of the governor components, particularly of a governor rope tensioning arrangement'. E2 failed to guide the skilled person to the claimed solution for this problem. Neither the first, nor the second overspeed pulleys of E2 could be considered a free pulley. In E2 the governor rope was also tensioned by springs 21, 22 located at the top and bottom of the hoistway, the spring 16 ensured that the same traction forces were transferred from the governor rope 18 to each overspeed pulley 14, 15. The skilled person would appreciate that spring 16 alone could not maintain tension in the governor rope.
Features f) and g) had a synergy such that this problem also applied when considering just these two differentiating features. If access to the governor were provided, the tensioning device would necessarily also be accessible. E2 failed to guide the skilled person to providing access to the governor from inside

of the elevator car.
An alternative problem read 'to provide an alternative way in which the governor components can be maintained' for which neither E1 nor E2 provided any hint.
The problem reading 'to provide an alternative location for the tensioning device' included a pointer to the claimed solution and so was not objective. Even if it were considered, E2 discloses a very different governor arrangement to E1 and the spring 16 was a very light spring not suitable for resisting the brake force which needed to be born by the brake rope 3 of E1. Modifying E1 would also require further modification going beyond simply placing a spring between pulleys 2 and 6.

1st auxiliary request

As argued in writing, E1 failed to disclose a movable mounting location for a free pulley and, failing to disclose a free pulley at all, E2 could also not provide a hint to such a movable mounting location. The technical problem addressed by claim 1 was thus still 'to facilitate maintenance and repair of the governor components, particularly of a governor rope tensioning arrangement'.

2nd auxiliary request

E1 failed to disclose the feature newly added to claim 1. The claimed weight fixed to the free pulley biased the free pulley and E2 failed to provide any guidance to the skilled person as to how to modify E1 to reach the subject-matter of claim 1. For the same reasons, the subject-matter of claim 5 also involved an inventive step.

Reasons for the Decision

1. *Main request*

Article 100(a) / Article 56 EPC

1.1 Contrary to the findings of the opposition division in the impugned decision, the Board considers that the ground for opposition under Article 100(a) in combination with Article 56 EPC prejudices maintenance of the patent.

1.2 It is common ground that the car mounted governor disclosed in Figure 3 of E1 can be considered to represent the closest prior art to the subject-matter of claim 1 of the patent in suit.

1.3 The Board concurs with the finding of the opposition division, and both the appellant and the respondent accepted, that features a), b), c), d) and e) of claim 1 were known from E1 as follows (the reference signs in parentheses relating to E1):

a) A car mounted governor (1) for an elevator system comprising:
b) an overspeed pulley (2) configured to be secured to an elevator car (5) of an elevator system, the overspeed pulley (2) configured to detect an overspeed condition of the elevator car (5)
c) via a rate at which a governor cable (3) passes around the overspeed pulley (2); and
d) a free pulley (6) configured to be secured to the elevator car (5),
e) the governor cable (3) routed around the free pulley (6).

1.4 E1 thus fails to disclose solely the following features of claim 1:

f) a tensioning device disposed at the free pulley and operably connected thereto to maintain a select tension on the governor cable; and
g) the governor being accessible from inside of the elevator car.

1.5 As regards the specific technical effect of feature f), paragraph [0003] of the patent identifies this to be the elimination of the tension weight located in the pit of a hoistway thereby reducing the overall volume of the elevator system. The Board considers however that the technical effect mentioned for feature f) in paragraph 3 of the patent is not necessarily achieved over the whole scope of claim 1. The claim does not specify how the governor cable is mounted and tensioned in the hoistway. It does in particular not exclude a tensioning weight still being provided in the hoistway. In E1 the governor rope (3) is tensioned by a levered tensioning weight (7) at the bottom and a spring (4) at the top of the hoistway. Therefore the provision of a tensioning device according to feature f) of claim 1 in the known car mounted governor can only be seen to contribute to the effect of maintaining a select tension on the governor cable.

As for feature g), this defines that access be provided to the governor, not to the tensioning arrangement. Feature g) can be seen to ease access to the governor for maintenance or repair, irrespective of its particular configuration or components. Consequently there is no technical effect achieved by all the distinguishing features in combination, such that the formulation of partial problems is appropriate.

Starting from the car mounted governor of Figure 3 of E1, the partial objective problems are thus seen to be as follows:
For feature f), partial problem 1:
To provide an alternative car mounted governor arrangement to maintain a select tension on the governor cable; and
For feature g), partial problem 2:
How to facilitate maintenance on the governor.
These partial objective technical problems essentially match those formulated by the appellant at oral proceedings.

1.6 The respondent's argument that features d), e), f) and g) worked together in providing a technical effect and so should be considered in combination when formulating the technical problem is not accepted. In application of the problem-solution approach, it is only the features differentiating the claimed invention over the closest prior art which are considered when formulating the objective technical problem to be solved.

Even if the respondent's technical problem were considered, this reads 'to facilitate maintenance and repair of governor components, particularly of a governor rope tensioning arrangement'. This cannot be seen as objective not least since including a tensioning device at the free pulley secured to the elevator car does not necessarily eliminate further tensioning devices located e.g. at the top / in the pit of the hoistway for which maintenance would not be facilitated. Additionally, adding a further component to the known governor does not necessarily facilitate its maintenance. The respondent's technical problem thus does not hold across the scope of claim 1 and thus

cannot be seen to be objective.

1.7 The respondent's additional argument that features f) and g) were technically linked to act together with synergy is also not accepted. As indicated in points 1.5 and 1.6 above, absent claim 1 limiting the governor rope tensioning arrangement to being located solely on the elevator car, providing access to the car mounted governor from inside of the elevator car is unable to facilitate maintenance and repair of rope tensioning components in such generality, since at least some of these components can reasonably be located at the top or bottom of the hoistway. Features f) and g) thus lack a synergy and are found to act separately firstly, to maintain a select tension on the governor cable and secondly, to facilitate maintenance on the car mounted governor. With similar reasoning, providing access to the governor does not necessarily result in the tensioning device being accessible since claim 1 fails to limit all tensioning devices being located on the elevator car, let alone being accessible from the inside of the car.

1.8 The respondent's further proposed technical problem reading 'to provide an alternative way in which the governor components can be maintained' is also not found to be objective. Absent a synergy between features f) and g), feature f) cannot be seen to have any relationship to maintenance of governor components, rather it is directed to an alternative way of maintaining a select tension on the governor cable.

1.9 Starting from E1 and wishing to solve the partial objective technical problems identified in point 1.5 above, the Board finds E2 and common general knowledge to guide the skilled person to the claimed solution

without exercise of an inventive step.

1.10 Partial problem 1 (see point 1.5 above)

1.10.1 Fig. 2 of E2 discloses a governor for an elevator in which a governor rope 18 passes around two pulleys 14, 15 from the rotation of which the speed of travel of the elevator car is determined by means of car speed detectors 28, 29 (see for example paragraph 18). A tension is applied to the governor rope by way of 'urging forces of the springs 21 and 22 and the urging device 16' (see col. 3, lines 31 to 33), where springs 21 and 22 are provided at the upper and lower ends of the governor rope respectively, each being connected to corresponding fixed members in the upper and lower portion of the hoistway. The urging device 16, which according to Figure 2 of E2 comprises a spring, urges the two pulleys 14 and 15 apart in order to prevent slip between the governor rope 18 and the pulleys 14, 15 (see paragraph 14). It is thus evident that the spring of the urging device 16 urging the pulleys 14, 15 apart contributes to the tensile force that is applied to the governor rope (see also col. 8, lines 40 to 43). The skilled person would thus see the spring of the urging device 16 as maintaining a select tension on the governor rope 18 of E2 and would therefore be guided to providing a spring urging the two pulleys 2, 6 of E1 apart in order to maintain a select tension. The skilled person would, from their common general knowledge and the function of the urging device as disclosed with respect to Figure 2 of E2, understand that, in order to allow relative movement, one of the pulleys 2, 6 of the car mounted governor according to E1 would have to be freed from the elevator car and only fixed thereto via the other pulley 6, 2. Being guided to such a modification of E1 by the teaching of

E2, the skilled person would therefore reach feature f) of claim 1 without exercising an inventive step.

1.10.2 E2 has a different roping arrangement to E1 insofar as braking in E2 occurs on the main rope 9 separate from the governor rope 18, whereas E1 uses the braking rope also for governing. The respondent's resultant argument that the skilled person would not consider E2 for combination with E1 is not accepted. Even though the rope 3 of E1 is used for braking, it is in parallel used as the governor rope, passing around the two pulleys 2, 6 in order to detect elevator car speed. An analogous governor arrangement is known from E2 in which the governor rope (albeit a dedicated rope) passes around pulleys 14, 15 to allow the elevator car speed to be detected. With maintenance of tension of the respective ropes around the pulleys of the governors being required in both E1 and E2, it is primarily the spring biasing of the pulleys 14, 15 of E2 that the skilled person would need in order to solve the problem relating to maintaining the select tension on the governor cable, this feature of E2 being readily adopted into the governor of the elevator system of E1 without any need to consider the governor rope of E1 being additionally used as a braking rope.

1.10.3 As to the respondent's argument that neither the first nor the second overspeed pulleys of E2 could be considered a free pulley, this is not found to prohibit adoption of the spring of the urging device 16 from E2 to push the pulleys 2, 6 of E1 apart in order to maintain a tension on the governor cable. With E1 already disclosing a free pulley 6, it is irrelevant whether the pulleys 14, 15 of E2 are free pulleys or not, since it is the concept of a spring urging two pulleys apart in order to maintain tension in a

governor rope passing around the two pulleys which would be understood by the skilled person as the hint to solve the posed technical problem.

1.10.4 The respondent's further argument that the governor rope of E2 was additionally tensioned by springs 21, 22 located at the top and bottom of the hoistway such that the spring 16 was not active alone in maintaining the select tension is not denied. Yet spring 16, located between the pulleys 14 and 15, is disclosed in col. 8, lines 40 to 43 of E2 to urge the pulleys apart in order to maintain a tensile force on the governor rope. Feature f) of claim 1 fails to define that the tensioning device (64) alone maintains a select tension on the governor cable such that the respondent's argument would not be considered a hindrance by the skilled person when adopting the spring 16 of E2 into the elevator system of E1.

1.10.5 Similarly, the respondent's contention that the spring 16 was a very light spring not suitable for resisting the brake force which needed to be born by the brake rope 3 of E1 is not accepted. No indication of spring size or spring constant (force applied per unit of compression/extension) is disclosed in any of the opposed patent, E1 or E2 such that any conclusions of spring unsuitability is mere conjecture. Nonetheless, it is the function of the spring that the skilled person would take from E2 rather than any particular dimensioning thereof. It is further noted that Fig. 3 of E1 already incorporates a compression spring 4 at the top of the hoistway, such that suitably rated springs for the brake rope 3 are evidently known and readily incorporated into the elevator system of E1. Appropriate dimensioning of such components belongs to

the common practice of the skilled person.

1.10.6 The respondent's further argument that incorporating a spring between pulleys 2 and 6 of E1 would require further modification is correct, in that a relative movement between pulleys 2 and 6 would have to be provided. However, as indicated in point 1.10.1 above, the skilled person would understand the need to release the rigid pulley fixings of one of the pulleys from the elevator car in order to provide the requisite relative movement (e.g. by way of a slotted mounting for one of the pulleys), based on their common general knowledge.

1.10.7 In summary, therefore, the skilled person would reach feature f) of claim 1 without exercising an inventive step.

1.11 Partial problem 2 (see point 1.5 above)

1.11.1 Faced with wishing to facilitate maintenance to a car-mounted governor, the Board finds the claimed solution of making the governor accessible from inside of the elevator car to be obvious to the skilled person based on their common general knowledge. In this regard it is noted that claim 1 fails to define a specific way in which such accessibility is achieved, a hatch in the body of the elevator car in the vicinity of the governor being one possible way which the skilled person would consider based on their common general knowledge.

1.11.2 The respondent's argument that neither E1 nor E2 supplied any hint to providing access to a governor from the elevator car is not found to be prohibitive for the skilled person to implement what is seen to be an obvious modification to solve the partial technical

problem and reach feature g) on the basis of their common general knowledge.

1.11.3 Starting from E1, therefore, the skilled person would reach feature g) of claim 1 without exercising an inventive step.

1.12 It thus follows that, starting from E1 and faced with the posed partial objective technical problems, the skilled person would be prompted by E2 and their common general knowledge in order to modify E1 and reach the subject-matter of claim 1 without having to exercise an inventive step. The ground for opposition under Article 100(a) EPC in combination with Article 56 EPC is thus prejudicial to maintenance of the patent as granted.

2. *1st auxiliary request*

Article 56 EPC

2.1 Relative to claim 1 of the main request, the following features have been added in claim 1 of the 1st auxiliary request:

the tensioning device comprising:
a movable mounting location for the free pulley;
a biasing member operably connected to the free pulley to bias a location of the free pulley to maintain the select tension on the governor cable.

2.2 In writing, the respondent suggested the technical problem to be solved when starting from E1 and wishing to reach the claimed subject-matter was, similarly to the main request, 'to facilitate maintenance and repair of the governor components, particularly of a governor rope tensioning arrangement'. However, for

corresponding reasons to those given with respect to the main request, this technical problem is not found to be objective, as also indicated in the Board's preliminary opinion, according to which it was further considered not evident how the above features could then have any influence over the negative inventive step finding for the independent claims of the main request.

2.3 To this provisional view in point 3.1.2 of the Board's preliminary opinion, the respondent offered no counter-arguments at oral proceedings. It also indicated that it did not wish to make any further submissions to the Board's resulting preliminary opinion that the subject-matter of claim 1 seemed not to involve an inventive step.

2.4 The Board thus confirms its preliminary opinion herewith, that the subject-matter of claim 1 lacks an inventive step (Article 56 EPC). The 1st auxiliary request is consequently not allowable.

3. *2nd auxiliary request*

Article 56 EPC

3.1 Relative to claim 1 of the 1st auxiliary request, claim 1 of the 2nd auxiliary request additionally recites that the biasing member is a tension weight fixed to the free pulley. Based on this feature, a partial objective technical problem to be solved may be seen as 'how to alternatively tension the governor rope', as it was also set out in the Board's preliminary opinion.

3.2 The sole inventive step attack to the subject-matter of claim 1 posed by the appellant was based on E1 in

combination with E2 and common general knowledge. It alleged that E1 disclosed a weight 7 included in the elevator system such that the alternative of providing a weight rather than a tension spring between the pulleys 2, 6 did not involve an inventive step. This is not accepted.

3.3 As a result of the combination of the spring disclosed in E2 with the governor known from Figure 3 of E1, the spring adopted from E2 in order to bias the pulleys 2, 6 of E1 apart would act to push the free pulley 6 away from overspeed pulley 2 (see pulley arrangement in Figure 3 of E1) upwards with a vertical component. There is already no indication in E1 which could have led the skilled person to consider the weight 7, fixed to the levered lower fixing point of the governor rope in the hoistway pit, as an alternative to a spring installed between the governor pulley 2 and the free pulley 6 as a result of the combination of E1 and E2. The passage in the opposed patent referred to by the appellant, stating that a spring could be used instead of a weight, as now specified in claim 1, obviously cannot serve as such indication. The only way for the skilled person to make the requisite modification of Figure 3 of E1 and reach the claimed subject-matter is seen to be through hindsight of the invention as claimed. Moreover, in the specific governor resulting from the combination of E1 and E2, further modified with weight 7 of E1 acting vertically downwards on free pulley 6, as required by the feature added to claim 1 in the 2nd auxiliary request, even if modified to be fixed to free pulley 6, the weight would act vertically downwards. Consequently such a modification of E1, as suggested by the appellant, would be unable to maintain a select tension in the braking rope 3 and so would not

result in the subject-matter of claim 1 being reached.

3.4 The appellant's further argument that using a weight over a spring would be disadvantageous still does not deprive the subject-matter of claim 1 of an inventive step. The Board considers that such an arrangement would not be "disadvantageous", it rather would not work at all. This means in the present case that the appellant failed to prove the obviousness of the subject-matter of claim 1 based on a combination of E1 and E2 with common general knowledge. Absent any workable suggestion from the appellant as to how a tension weight might be fixed to a free pulley of E1 in order to provide an alternative tensioning arrangement of the governor rope, a persuasive inventive step objection cannot be recognised.

3.5 The subject-matter of claim 1 thus involves an inventive step over the cited documents and the objections raised by the appellant. No different arguments were raised questioning the presence of an inventive step in the subject-matter of claim 5, such that this is also seen to involve an inventive step.

3.6 Thus the appeal is allowable to the extent that the patent is to be maintained in amended form as expressed in the order.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. The case is remitted to the opposition division with the order to maintain the patent with the following claims and a description to be adapted thereto:

Claims:
1 to 9 according to the 2nd auxiliary request submitted with the reply to the statement setting out the grounds of appeal.

The Registrar: The Chairman:

C. Vodz T. Rosenblatt

Decision electronically authenticated