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D E C I S I O N
of 22 October 1996

Case Number: T 0030/93 - 3.2.3

Application Number: 83301100.0

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Language of the proceedings: EN

Title of invention:
Revolving door systems

Patentee:
BESAM AKTIEBOLAG

Opponent:
GALLENSCHÜTZ METALLBAU GMBH
BOON EDAM B.V.

Headword:
-

Relevant legal provisions:
EPC Art. 56

Keyword:
"Inventive step (no)"

Decisions cited:
-

Catchword:
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Case Number: T 0030/93 - 3.2.3

D E C I S I O N
of the Technical Board of Appeal 3.2.3
of 22 October 1996

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Decision under appeal: **Decision of the Opposition Division of the European Patent Office posted 3 November 1992 revoking European patent No. 0 087 977 pursuant to Article 102(1) EPC.**

Composition of the Board:

Chairman: C. T. Wilson
Members: J. du Pouget de Nadaillac
W. Moser

Summary of Facts and Submissions

I. The present appeal lies from the decision of an Opposition Division of the European Office dated 3 November 1992, revoking European patent No. 0 087 977 (based on European patent application No. 83 301 100.0).

II. Two oppositions were filed against said European patent. Opponent I objected that the subject-matter of all granted claims is not new or does not involve an inventive step having regard to an alleged prior use. Opponent II alleged the same grounds of opposition, however on the basis of two prior art documents, namely D1 and D2, hereinafter listed. The Opposition Division, in its grounds, held that the subject-matter of claim 1 as granted does not involve an inventive step in view of the teaching of D1 and D2.

III. The appellant (proprietor of the patent) filed the appeal on 23 December 1992 and paid the appeal fee on the 28 December 1992. The statement of grounds was received on 24 February 1993, accompanied by three sets of claims, as main and auxiliary requests 1 and 2, respectively.

Both respondent I (opponent I) and respondent II (opponent II), in their counter-statements respectively received on 10 July 1993 and 8 September 1993, rebutted the appellant's pleading.

IV. In a communication dated 18 October 1994, the Board of Appeal expressed a provisional opinion, stating in particular that the subject-matter of Claim 1 according to each request appeared to be new with respect to the cited prior art documents, since sensing means for detecting a person are not identical to a metal object

detector, but that said subject-matter does not appear to involve an inventive step, document D3 (hereinafter listed) and D1 being mentioned.

In response to another communication of the Board accompanying the invitation to oral proceedings, the appellant filed on 24 September 1996 two new Claims 1, respectively as main and auxiliary request, together with a new introduction to the description of the patent in suit.

Oral proceedings took place on 22 October 1996. Although duly summoned, respondent I phoned just before said oral proceedings to state that he would not attend.

V. Claim 1 according to the main request reads as follows:

"1. A revolving door system comprising:

rotatable centre shaft means (12) defining an upright axis; a plurality of wings (14) circumferentially disposed about the shaft means (12) rotatable about the axis;
a pair of upright opposing panels (20, 22) disposed in facing spaced apart relationship to define a partially enclosed region (24) bounding the wings (14) and defining opposing first (28; 26) and second (26; 28) openings;
rotation means (46, 47, 44, 42, 35, 39, 37) for rotating the shaft means (12);
controller means (48) for actuating the rotation means in a forward rotation direction;
first sensing means (29, 31) for detecting the presence of each person seeking improper access and entering the partially enclosed region (24) from the first opening (28, 26), the controller means (48) being responsive to

the first sensing means (29, 31) for automatically stopping rotation of the shaft means (12) in the forward rotation direction;
characterized by:
in case of automatically stopping rotation of the shaft means (12) in the forward rotation direction, controller means (48) being responsive for thereafter automatically limited actuation the rotation means in a reverse direction, whereby a person attempting to pass from the first opening (28, 26) to the second opening (26, 28) is prevented from doing so and is forced back to the first opening (28; 26)."

Claim 1 according to the auxiliary request has the same wording as claim 1 of the main request, however with the addition of the feature, "so as to uncover the first and second openings", before the word "whereby" in the characterizing portion of the claim.

VI. During the appeal proceedings the following prior art publications cited either in the examination or in the opposition proceedings were considered:

D1: GB-A-2 049 030
D2: US-A-4 060 039
D3: DE-A1-2 803 765.

VII. The appellant submitted the following arguments:

The prior art document D3, which represents the prior art closest to the present invention, discloses a revolving door system, the aim of which is to avoid the entry of an unauthorized person (hereinafter called "intruder"). Within an opening of the door, sensing means detects such a person and stops the door.

Supposing now that an authorised person gets into the entry opening in order to reach the exit and that an intruder intends to enter into the opposite opening, namely the exit, then two unfavourable situations can occur:

In a first situation, the door brought into rotation by the authorized person needs at least a lapse of time of one second or more to stop as soon as it has received a signal from the sensing means, and during this time period it rotates enough so as to trap both persons before stopping. Once the door is stopped and consequently locked, nothing more can happen automatically and, thus, a third person, for example a porter, has to unlock the door and rotate it to free the persons.

In a second situation, an authorized person has entered through the entry opening and the door begins rotation. As the door has rotated over almost a span of 90°, thus confining the authorized person in an enclosed space, an intruder intends to go through the exit opening, however the door stops immediately. The intruder then leaves the sensing area, so that the door automatically restarts in the forward direction. The authorized person is therefore forced towards the exit, namely towards the unauthorized person, thereby leading to a dangerous situation in case of the intruder being an assailant.

Thus, the problem underlying the present invention is to improve the door system according to D3, so that the activity of a third person is not needed to release someone trapped within the door and so that an authorised person is not forced to move into the area of the unauthorized person.

The solution according to Claim 1 of each request comprises two main differences, which are the door rotation in a reverse direction and the independency of this door movement from the sensing means.

The present invention is therefore based on a philosophy quite different from the one underlying the system according to D3. Instead of either blocking the door system or pushing a person always in the forward direction, a new **automatic** function is involved, i.e. the reverse rotation of the door which automatically follows a blocking of the door, whatever is the signal of the sensing means. Thus, an opposite direction to the teaching of D3 is followed. An inventive step is therefore involved. A further advantage of the present invention is that an authorised person does not remain enclosed within the door should an object be left on the sensing means mat.

VIII. The respondents argued that the problem dealt with in the present invention is already suggested by document D3, which expressly mentions that a confinement of both the authorised person and the intruder within the door system according to this prior art must be avoided, and this by a correct choice of the detection area of the sensing means inside the door and by a detection of limited spans of the doors rotation. Moreover, as soon as it is supposed that the door rotation is not stopped quickly enough so as to prevent an enclosing of both persons, the solution itself is obvious, one being faced with a one-way street situation. The kind of doors concerned by the present invention have their main use in public buildings, where a smoothly circulating flow of people in one direction is wanted. For this reason, the second situation envisaged by the appellant is completely out of the question.

IX. The appellant requested that the decision under appeal be set aside and that the patent be maintained on the basis of the following requests:

(a) **Main request:** Claim 1 filed 24 September 1996;
Claims 2 to 11 as granted;
description as granted, except for column 1, lines 3 to 34, which has been replaced by a text filed on 24 September 1996;
drawings as granted.

(b) **Auxiliary request:** Claim 1 filed on 24 September 1996;
Claims 2 to 11, description and drawings as in the main request.

The respondents requested that the appeal be dismissed.

Reasons for the Decision

1. The appeal is admissible.

Main request of the appellant

2. Prior art document D1 was considered in the decision contested by the present appeal as reflecting the prior art closest to the present invention. This publication indeed describes a revolving door comprising sensing means. However, the main object of this door is to prevent **weapon-carrying** persons from entering an enclosed area and to trap them within the door, till they are delivered to the police by means of a **manual**

rotation of the door. The sensing means consequently detects weapons and not persons. The main aim of the revolving door system according to the present invention is different therefrom, since it is locked to prevent **any** person from entering through the **wrong** opening or side of a door. The sensing means detects persons and not metal (or weapons). Doors with such an object are mainly used in public buildings for **a smoothly circulating flow of people**, the entry and exit openings being if necessary reversed according to the day hours. Important is the one-way passage of people through the door and not their stopping or confinement.

Such an aim is envisaged in another prior art document, namely D3, which also describes a revolving door comprising sensing means, however sensing means for detecting the **presence of a person.** Moreover the system described therein is fully automatic and precludes the necessity of a porter. Therefore, in the opinion of the Board, this document D3 discloses a door system representing the closest prior art with regard to the subject-matter of claim 1.

3. The revolving door described in said document D3 comprises all the features defined in the preamble of claim 1. The sensing means for detecting a person can be either a light beam detector or a mat switch. The door can **only** rotate in the forward direction and, once rotating, can be stopped by locking means actuated by the controller means only when a predetermined angle of rotation has been covered. The corresponding angular sector preferably corresponds to the circle arc subtended by two adjacent wings of the door. Detector means spaced around the circumference of the door provide the necessary information about the movement of

the door, and the first sensing means for detecting a person are deactivated when an authorised person reaches the area covered by these sensing means. Said first sensing means are located within the angular sector of the first opening, i.e. of the exit opening.

This known system operates as follows:

When an authorised person reaches the entrance of the door, an opening signal is sent to the controller means, which unlocks the door and causes the motor to begin the rotation. Should, however, an intruder attempt to enter the opposite opening and, thus, be detected by the first sensing means, the door is immediately stopped and locked. Only when the intruder steps back out of the detecting area of the first sensing means can the door automatically be once more unlocked and complete its rotation. When the door has rotated over a span of 180°, so that the authorised person can exit, it stops and becomes locked, unless another opening signal was received by the controller means, leading to a new 180° rotation of the wings.

In said document D3, page 9, lines 2 to 8, it is explained that the predetermined angular sector which is detected by the detector means, and the position of the first sensing means are to be chosen so as to avoid a trapping of both the intruder and the authorised person, since otherwise both are enclosed and can no more free themselves.

4. Contrary to the teaching of this prior art document D3, which, as seen above, specifically excludes confinement of both an authorised and an unauthorised person within the door, the appellant bases at least partially his argument on inventive step of the subject-matter of the main request on the possibility that such a situation may occur with this known system, since the door wings,

although caused to stop, would continue rotating during a short time because of their inertia, instead of immediately stopping. In other words, a situation is envisaged based on the premise that the known system works in a way specifically stated in the prior art document to be avoided. It appears therefore to be an artificial situation.

The second unfavourable situation, which is described by the appellant, namely the situation in which the authorised person is forced to the exit to be faced by the unallowed person, is unrealistic or at least completely besides the main object of the concerned door, since it presupposes that the unallowed person will be a dangerous person. However, as previously seen, the object underlying the present invention is not to provide a security against dangerous persons; moreover, should this be the case, there is no need for an assailant to try to enter through the door, if his intention is to take hostages in the vicinity of the **exit** area of the door. Also, the further rotation of the door is under the command of the authorised person who could, if he wished, remain safely within the door until the unauthorised person leaves the vicinity.

This formulation of the problem expounded by the appellant is therefore based on situations, which are not logical, and it seems to be artificial and unrealistic to assume that the problem underlying the present invention should be seen in the improvement of the device known from D3 having regard to such situations.

5. Prior art D3 is mentioned in the introductory part of the description of the patent in suit and it is set out in the description of the patent in suit that, in view of the prior art, the problem to be solved by the

present invention is to provide a fully automatic system which allows passage in an authorised direction yet prohibits passage in an unauthorised direction and does not require the use of personnel to ensure security.

Since the prior art system according to D3 already solves this problem, however in a different way, it appears that, in fact, the present invention provides another solution to the same problem. Therefore, starting from the closest prior art system according to D3, the objective problem underlying the subject-matter of claim 1 of the patent in suit should be seen as providing an alternative solution to the one known from D3.

6. At the end of page 7 of document D3, it is specified that the first sensing means for detecting the presence of a person are so positioned that an intruder by moving backwards can leave the first opening. The previously cited passage at the beginning of page 9 - see point 3 above - also emphasises the importance of the location of the sensing means. Therefore, the person skilled in the art receives from the whole teaching of D3 an incentive to consider where the first sensing means are to be positioned, that is to say he has the possibility to modify this position when he looks for an alternative solution.

Moreover, he knows from D3 that, once an intruder is detected within the first opening, an authorised person, who entered the door just before, is held confined within said door, i.e. is kept in a situation which does not really correspond to the main object of these doors, namely a smoothly circulating flow of the authorised people. As a consequence thereof, the skilled person will be logically led to the question of bringing the intruder, who is the one responsible for

this situation, in said unfavourable position, allowing simultaneously the authorised person to reach the exit without interruption, fulfilling thereby the main aim of this kind of door, at least for said authorised person. Thus, the person skilled in the art, looking for an alternative, would also envisage the possibility of detecting the intruder later, within the door, and consequently to position the first sensing means accordingly.

7. Once the sensing means are positioned so far within the doors that the intruder cannot simply step out again when the door stops, the solution of reversing the door is obvious. Reversal of a revolving door to prevent unauthorised passage and to force a person trapped in an enclosed area of the door to move back to the opening is known, see in this respect document D1, and moreover, in the present circumstances, it is the only possibility having regard to the first object of the door in question, namely to prevent an intruder from going through the door.

8. The fact that the reversal is automatic or, as put forward by the appellant, independent of the sensing means, rather than being manual as is the case in the system according to D1, cannot be considered as an inventive feature, since it already was the object of the closest prior are, namely D3, to provide an **automatic** system. In document D1, a manual operation for the reversal of the door is foreseen for the mere reason that it is wanted to hold the intruder confined until the police arrive. In the present invention, as well as in the closest prior art D3, one is neither faced by such a problem nor is it an aim to hold any

unauthorised person. On the contrary, it is wished to bring the door back to a ready operating position without undue delay, and an automatic system is therefore needed.

It is moreover to be remarked that the distinguishing feature put forward by the appellant having regard to the subject-matter of claim 1, namely the independency of the reversal movement from the sensing means, is rather artificial, since this reversal depends on the stopping of the door and, thus, on a signal from the sensing means. In fact, the presence of the signal coming from the sensing means causes the stopping **and** the reversal of the door.

The appellant's argument about the possible leaving of objects within the detected area of the door is irrelevant, since the first sensing means are defined in Claim 1 to detect persons and not objects. Moreover, such a problem was not considered in the original disclosure of the patent in suit.

9. For all these reasons, the Board is of the opinion that the subject-matter of Claim 1 according to the main request lacks an inventive step in the sense of Article 56 EPC. Claims 2 to 11 are dependent on Claim 1 and, thus, must share the fate of this claim.

Auxiliary request of the appellant

10. The feature added in Claim 1 of the auxiliary request, namely that the reversal of the door uncovers the first and second openings, either is partly implicitly contained in the subject-matter of the previously examined Claim 1 of the main request having regard to the first opening or, considering the second opening, is of no significant inventive importance being a simple matter of geometry of the door. During the oral

proceedings, the parties did not seem to regard the scope of the claim as being significantly different from that of Claim 1 of the main request. Thus, for the same reasons as above, Claim 1 of the auxiliary request is not allowable.

11. As the present invention lacks any inventive step in view of the cited prior art documents, the patent in suit must therefore be revoked and there is consequently no need to check whether the alleged prior use constituted prior art under Article 54(2) EPC or not.

Order

for these reasons it is decided that:

The appeal is dismissed.

The Registrar:

N. Maslin

The Chairman:

C. T. Wilson