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File No.: T 0005/91 - 3.2.3
Application No.: 85 200 119.7
Publication No.: 0 155 016
Classification: F25D 23/08
Title of invention: Sealing gasket between a door and its related shoulder
on a cabinet, in particular of a refrigerator

D E C I S I O N
of 24 June 1993

Applicant:

Proprietor of the patent: ILPEA S.p.A.

Opponent: REHAU AG & Co.

Headword: Sealing gasket/ILPEA

EPC: Art.56 EPC

Keyword: "Inventive step (denied)" - "Economical success as indication of
inventive step"

Headnote
Catchwords

The commercial success of an invention in a technical field of intense activity, even if proven to be attributable to the claimed subject-matter cannot reverse the conclusion of obviousness arrived at objectively by the problem-solution approach in a case where the solution is suggested by combining the principle of operation of the nearest prior art with the common general knowledge of the person skilled in the art.



Case Number: T 0005/91 - 3.2.3

D E C I S I O N
of the Technical Board of Appeal 3.2.3
of 24 June 1993

Appellant:
(Opponent)

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Respondent:
(Proprietor of the patent)

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Representative:

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Decision under appeal:

Decision of the Opposition Division of the
European Patent Office dated 12 September 1990,
despatched in writing on 3 December 1990 rejecting
the opposition filed against European patent
No. 0 155 016 pursuant to Article 102(2) EPC.

Composition of the Board:

Chairman: C.T. Wilson
Members: H. André
J.C. Saisset

Summary of Facts and Submissions

- I. European patent application No. 85 200 119.7, filed on 6 February 1985, was granted on 23 December 1987.

Granted Claim 1 reads as follows:

"Gasket for effecting a tight seal between a door and its related shoulder of a cabinet, in particular of a refrigerator, comprising: chamber (3) acting as a seat for a magnetic insert and a tubular bellows section (1) which is elastically extensible in the direction perpendicular to a base (4), and at least two side walls extending from said base and attached to said chamber (3), characterized by the fact that at least the side wall (6) of the tubular bellows section (1) which is intended for being faced in its working position towards the external edge of said shoulder defines at least two portions (9, 10) of substantial different stiffness, the portion (9) of higher stiffness extending from said base (4) and being connected through a hinge point (11) to the portion (10) of lower stiffness which is attached to said chamber (3), said hinge point (11) allowing the recovery of side stability of the bellows as to prevent deformation effects during closing of the door."

- II. The patent was opposed on 30 July 1988 by the Appellant (Opponent) who requested revocation of the patent on the ground that the patent does not meet the requirements following from Articles 52 to 57 EPC *inter alia* in the light of the following documents:

(D1): US-A-3 126 590

(D6): REHAU Catalogue 50320 (5.77): Art. No. 620831,
page 9, Drawing No. PY-509D

- (D7): REHAU Catalogue 50320 (5.77): Art. No. 619161,
page 9, Drawing No. PY-260B
- (D8): REHAU Catalogue 50320 (5.77): Art. No. 602312,
page 3
- (D9): REHAU Catalogue 50320 (5.77): Art. No. 633000,
page 12
- (D10): REHAU Catalogue 50320 (5.77): Art. No. 622421,
page 20.

- III. The opposition was rejected pursuant to Article 102(2) EPC in the oral proceedings of 12 September 1990 and the reasoned decision was posted on 3 December 1990. The Opposition Division came to the conclusion that the grounds of opposition did not prejudice maintenance of the patent as granted.
- IV. The Appellant filed a notice of appeal on 21 December 1990 paying the appeal fee on the same day. He held that the subject-matter of the claims as granted could be arrived at by the skilled person without an inventive step being involved; the subject-matter of Claims 1 and 2 is not even novel so that the patent should be revoked.
- V. In a communication of the Board pursuant to Article 11(2) RPBA dated 24 January 1992 the Board set out that the REHAU Catalogue 50320 (D6 to D10) would probably have to be regarded as prior art in the sense of Article 54(2) EPC. According to the provisional opinion of the Board it was concluded that following the problem-solution approach it would appear obvious to combine the teachings of any one of the documents D6 to D10 with that of document D1 and to arrive thus at the subject-matter of Claim 1.

- VI. With his letter of 2 July 1992, received on 6 July 1992, the Respondent filed new documents including an amended Claim 1 in which after the passage "the portion (9) of higher stiffness extending..." of the granted Claim 1 the term "obliquely" was inserted.
- VII. On 11 December 1992, the Appellant filed the new citation ES-U-213 639, published on 16 June 1976, maintaining that this Spanish citation showed that the subject-matter of the contested patent was very well-known
- VIII. In the oral proceedings before the Board the Respondent defended the case on the basis of the documents filed on 6 July 1992 according to the main request; he submitted two new sets of Claims 1 to 3 according to a first and a second auxiliary request, the dependent Claims 2 and 3 of both requests corresponding to the granted version.

Claim 1 according to the first auxiliary request reads as follows:

"Gasket for effecting a tight seal between a door and its related shoulder of a cabinet, in particular of a refrigerator, comprising: chamber (3) acting as a seat for a magnetic insert and a tubular bellows section (1) which is elastically extensible in the direction perpendicular to a base (4), and at least two side walls extending from said base and attached to said chamber (3), characterized by the fact that at least the side wall (6) of the tubular bellows section (1) which is intended for being faced in its working position towards the external edge of said shoulder defines at least two portions (9, 10) of substantial different stiffness, the portion (9) of higher stiffness extending obliquely from said base (4) and being connected through a hinge point (11) to the portion (10) of lower stiffness which is

attached to said chamber (3), said hinge point (11) being formed by a sharp stiffness decrease between said portion (9) of higher stiffness and said portion (10) of lower stiffness, so that said portion (10) of lower stiffness can perform vertical movements, whilst said portion (9) of higher stiffness does not undergo appreciable shifts, said hinge point (11) allowing the recovery of side stability of the bellows as to prevent deformation effects during closing of the door."

Claim 1 according to the second auxiliary request reads as follows:

"Gasket for effecting a tight seal between a door and its related shoulder of a cabinet, in particular of a refrigerator, comprising: chamber (3) acting as a seat for a magnetic insert and a tubular bellows section (1) which is elastically extensible in the direction perpendicular to a base (4), and at least two side walls extending from said base and attached to said chamber (3), characterized by the fact that at least the side wall (6) of the tubular bellows section (1) which is intended for being faced in its working position towards the external edge of said shoulder defines at least two portions (9, 10) of substantial different stiffness, the portion (9) of higher stiffness extending obliquely from said base (4) and being connected through a hinge point (11) to the portion (10) of lower stiffness which is attached to said chamber (3), said hinge point (11) being formed by a sharp stiffness decrease between said portion (9) of higher stiffness and said portion (10) of lower stiffness, so that said portion (10) of lower stiffness can perform vertical movements, whilst said portion (9) of higher stiffness does not undergo appreciable shifts, said portions (10) of lower stiffness being substantially parallel to or inclined towards said base (4), said hinge point (11) allowing

the recovery of side stability of the bellows as to prevent deformation effects during closing of the door."

- IX. The Appellant requests that the patent be revoked in its version according to the main request and the first and second auxiliary requests. His arguments can be summarised as follows:

The subject-matter of any of the independent claims would be obvious for the skilled person from a combination of the disclosure of the document ES-U-213 639 with that of document D1, D6, D8 or the gasket No. 007A according to the ANGLO-PLAST catalogue cited in the opposition proceedings. It is clear that not only the obliquely extending side wall portion of higher stiffness of the gasket according to the Spanish citation but also the corresponding vertically extending side wall portions according to the documents D6 and D8 have the effect of increasing the lateral stability of the gasket and the skilled person would therefore envisage a combination of the teachings of these documents.

The claims according to the auxiliary requests incorporating features from the description which may not have been included in the European search should not be admitted to the proceedings.

- X. The arguments of the Respondent in support of his requests (cf. above section VIII) can be summarised as follows:

- In the prior art disclosed by the documents D1, D6 and D8 there is no reference to the problem underlying the invention, i.e. to provide a sealing gasket for cabinets, which couples the ideal characteristics of side stability of the bellows as well as of elasticity

of the bellows in the direction along which it undergoes the compressing action during closing of the door. In the gasket according to document D6 sufficient extensibility of the bellows to adapt the gasket to a wide range of cabinet body-door configurations cannot be achieved whereas the gasket ~~shown in document D8~~ undergoes a remarkable deformation due to the thinner side wall portion being of extended size.

- The Spanish citation ES-U-213 639 also does not tackle the inherent problem of the invention. The problem to be solved is not at the internal, but at the external side of the gasket. In the gasket shown in the Spanish citation, the side wall portion of higher stiffness is arranged at the wrong side. This prior art cannot, therefore, solve the underlying problem, but rather directs the skilled person away from the solution according to the invention.

- It should also be taken into account that approximately 80% of the refrigerators produced in Europe in the preceding years have been provided with the type of gasket built according to the principle revealed by the invention. The invention has therefore to be regarded as an enormous commercial success obtained in a technical field of intense activity.

Reasons for the Decision

1. The appeal complies with Articles 106 to 108 and Rule 64 EPC; it is admissible.

2. *Article 123 EPC*

2.1 Main request

Claim 1 is based on the original Claim 1 in combination with Figures 1 and 2 of the original drawings.

Claims 2 and 3 correspond with the original Claims 2 and 3.

The feature introduced into Claim 1 as granted, namely that the portion of higher stiffness extends obliquely from the base, leads to a restriction of the protection conferred.

The claims comply therefore with Article 123(2) and (3) EPC.

2.2 First and second auxiliary requests

The feature of the independent Claims 1 according to the first and the second auxiliary requests, introduced additionally to the subject-matter of Claim 1 according to the main request, "said hinge point (11) being formed by a sharp stiffness decrease between said portion (9) of higher stiffness and said portion (10) of lower stiffness, so that said portion (10) of lower stiffness can perform vertical movements, whilst said portion (9) of higher stiffness does not undergo appreciable shifts", is derivable from the passage bridging pages 3 and 4 of the original description.

The further feature according to Claim 1 of the second auxiliary request "said portions (10) of lower stiffness being substantially parallel to or inclined towards said base (4)" is disclosed in Figures 1 and 2 of the original drawings.

~~The above-cited additional features are of limitative character in respect of the scope of the granted Claim 1.~~

Dependent Claims 2 and 3 according to the first and second auxiliary requests correspond with the version as granted.

Hence the claims comply with the requirements of Article 123(2) and (3) EPC.

3. Novelty of the subject-matter of the independent claims according to the main and auxiliary requests was no longer disputed by the Appellant in the oral proceedings before the Board so that this issue needs no further argument.

In the following, it has therefore to be decided whether the teachings of the independent Claims 1 according to the main and auxiliary requests involve an inventive step.

4. *Main Request*

- 4.1 The prior art reflected by the document ES-U-213 639 discloses a gasket for effecting a tight seal between a door and its related shoulder of a refrigerator, comprising:

a chamber (6) acting as a seat for a magnetic insert and a tubular bellows section which is elastically

extensible in the direction perpendicular to a base (8), and two side walls (4,7) extending from said base and attached to said chamber whereby one (7) of the side walls defines two portions of substantially different stiffness, the portion of higher stiffness extending obliquely from said base and being connected through a hinge point to the portion of lower stiffness which is attached to said chamber, said hinge point allowing the recovery of side stability of the bellows as to prevent deformation effects during closing of the door.

This document which was cited late, i.e. only in the appeal proceedings, reflects the closest prior art. In agreement with the jurisprudence of the Boards of Appeal (cf. e.g. Decision T 248/85, OJ EPO, 1986, 261) an objective assessment of inventive step starting from the closest prior art implies that this has been positively identified and considered.

The Board admits the document ES-U-213 639 into the proceedings in order to provide the conditions for correctly applying the problem-solution approach in view of the decision upon the issue of inventive step.

- 4.2 The subject-matter of Claim 1 differs from the disclosure of the document ES-U-213 639 in that the side wall defining the two portions of substantially different stiffness is the side wall which is intended for being faced in its working position towards the external edge of the shoulder.

The general problem inherent in gaskets with magnetic inserts for effecting a tight seal between a door and its related shoulder of a cabinet is that during the closing movement of the door the magnet attaches to the closest point on the metal shell of the cabinet before the closing movement is terminated, so that the actual

position of the magnet on the cabinet shell in the closed door position is displaced from the nominal magnet position which would occur without the premature attaching of the magnet. The direction in which such a displacement is effected depends manifestly on the cinematic relations of the door closing mechanism, in particular on the position of the door pivot relative to the cabinet.

This general problem is solved according to the gasket known from the document ES-U-213 639 by providing the side wall which is intended for being faced in its working position towards the internal edge of the cabinet shoulder with two portions of substantially different stiffness, the lower or base portion being the portion of higher stiffness. An increase of the side stability of the gasket is obtained by this measure whereby in particular a displacement of the magnet towards the external cabinet shoulder may be prevented due to the side wall base portion extending obliquely inwards.

In contrast to this known gasket the effect obtained from the above-cited differential feature of Claim 1 is to be seen in an increase of the resistance of the gasket to lateral displacement, in particular the displacement of the magnet in a direction inwards from the external cabinet shoulder.

The objectively underlying problem of the invention is therefore to improve the gasket known from the document ES-U-213 639 such that the lateral stability of the gasket is increased, in particular the resistance towards a displacement of the magnetic insert in an inward direction from the cabinet shoulder which would cause a deformation of the gasket.

4.3 From a basic knowledge of mechanics the skilled person is familiar with the fact that the side stability of the suspension of a body depends on the stiffness of the supporting beam in the sense that a higher stiffness of the beam leads to a higher side stability. In the prior art known from the document ES-U-213 639 (cf. Figures 2 and 3), the right-hand side wall of the bellows connecting the base to the hinge point formed between the two portions of substantially different stiffness acts as a supporting beam of that bellows section being remote from the base and the chamber whereby the portion of higher stiffness due to being arranged laterally inwards of the magnet and extending from the base obliquely inwards can exert a particularly strong resistance towards any displacement of the magnet in a direction outwards, i.e. towards the cabinet shoulder.

4.4 A displacement of the magnet during the closing movement of the door may basically occur in a direction outwards or inwards in relation to the cabinet shoulder depending upon the particular cinematic situation of the cabinet door concerned as outlined in above section 4.2. It is already clear from basic mechanics that in a configuration according to ES-U-213 639 in which, however, the two portions of substantial different stiffness are arranged on the left-hand side of the gasket illustrated in Figure 3, i.e. at the side faced in the working position towards the external edge of the cabinet shoulder, a particularly strong resistance will be exerted by the side wall towards displacement of the magnet in a direction inwards from the edge of the cabinet shoulder.

The skilled person faced with the inherent problem of increasing the side stability of the gasket according to ES-U-213 639 in view of a displacement of the magnet in an inward direction would therefore be led by his

general knowledge of mechanics to provide an arrangement of the gasket side wall comprising the two portions of different stiffness which is "mirrored" in relation to the known gasket, solving thereby his problem.

Apart from the above considerations, the gaskets illustrated in each of the documents D6 and D8 suggest the concept of providing both side walls of the gasket with an arrangement comprising two portions of substantially different stiffness, i.e. also the side wall which is intended for being faced in its working position towards the external edge of the related cabinet shoulder.

As the effect of this known side wall design is readily recognisable to be a measure for increasing the side stability of the gasket (cf. above section 4.3), the skilled person is induced to provide also the left-hand or external side wall according to the gasket shown in the document ES-U-213 639 with a two-part side wall construction as shown on the right-hand or internal side of Figure 3 of the Spanish citation, the construction having to be arranged in a "mirrored" position for reasons of symmetry.

- 4.5 Having regard to the argument of the Respondent that in the gasket known from document D6 sufficient extensibility of the bellows to adapt the gasket to a wide range of body-door configurations of the cabinet cannot be achieved whereas the gasket known from document D8 suffers from a remarkable deformation, it is clear that with the less stiff side wall portion increasing in length, the lateral stiffness of the gasket is reduced whereas extensibility of the gasket is increased. It falls within the routine activity of the skilled person to choose a gasket design which for the particular use offers an appropriate compromise between

the issues of extensibility and lateral stability of the gasket. Besides, the Respondent's argument is irrelevant since there is no indication in Claim 1 as to the degree of extensibility or lateral stability of the bellows or as to the length or proportions of the two-part side wall.

The further argument of the Respondent that the invention has to be regarded as an enormous commercial success obtained in a technical field of intense activity aims at an indication of the presence of an inventive step.

According to the jurisprudence of the Boards (cf. e.g. Decision T 24/81, OJ EPO 4/1983, 133) a mere investigation for indications of the presence of inventive step is no substitute for the technically skilled assessment of the invention from an objective point of view vis-à-vis the state of the art.

The indication cited by the Respondent is not persuasive to reverse the conclusion of obviousness outlined above in the present case where the inherent technical problem arose from the normal use of the gasket and the solution was suggested already by perceiving the manner of operation of the relevant prior art and combining this with the general knowledge of the person skilled in the art.

4.6 For the foregoing reasons, the subject-matter of Claim 1 lacks an inventive step as required by Article 56 EPC.

5. *Auxiliary Request 1*

5.1 Claim 1 incorporates additionally to the subject-matter of Claim 1 according to the main request the feature that the hinge point (11) is formed by a sharp stiffness

decrease between the portion (9) of higher stiffness and the portion (10) of lower stiffness so that the portion (10) of lower stiffness can perform vertical movements whilst the position (9) of higher stiffness does not undergo appreciable shifts.

~~5.2~~ ~~The amendment introduced into the claim concerns the structural design of the hinge point leaving unchanged all the other features of the claim.~~

The prior art discloses different configurations of the hinge point provided between two adjacent side wall portions of gasket bellows such as the hinge point according to the document ES-U-213 639 defined by the plane common to the upper end of the gradually tapering base-side portion and the lower end of the upper portion of lower stiffness.

A further configuration in which the hinge point is, however, formed by a sharp decrease of thickness and - following therefrom - of stiffness between the two portions of different stiffness so that the portion of lower stiffness can perform vertical movements whilst the portion of higher stiffness does not undergo appreciable shifts, is disclosed in document D6 or D8.

5.3 Whenever it is required that the hinge point during operation of the cabinet door remains in a fixed position relative to the base portion of the gasket, the reason for which may be the adaptation of the gasket to a particular door-cabinet construction, the choice of preference will be the type of hinge point known from either of documents D6 and D8. As it is the customary practice of the person skilled in the art, to select among the possibilities offered in the state of the art the component or construction appropriate for the

particular case, the additional teaching of Claim 1 (see above section 5.1) does not render the claim inventive in the sense of Article 56 EPC.

6. *Auxiliary Request 2*

6.1 Claim 1 contains with regard to Claim 1 according to auxiliary request 1 the further feature that the portion of lower stiffness is substantially parallel to or inclined towards the base of the gasket bellows.

6.2 The gasket known from document D6 shows that the side wall portion of lower stiffness of the left-hand side is substantially parallel to the base whereas the corresponding side wall portion of the right-hand side is of approximately semi-spherical shape with the major part of the wall being inclined towards the base. The document D8 shows that the side wall portion of lower stiffness is essentially spherical comprising portions being parallel to and portions being inclined towards the base.

6.3 The side wall portion of lower stiffness has to be connected to the chamber housing the magnetic insert on the one side and to the hinge point on the other side. The question in which direction the portion of lower stiffness extends in the range between the two connection points depends on various factors of the particular use such as the space available for arranging the bellows and the desired degree of extensibility and side stability of the bellows. Again, it lies within the design choice of the skilled person to choose the most advantageous shape of the lower stiffness wall portion from the prior art arrangements, such a choice being a routine measure which does not involve an inventive step.

Claim 1 does not, therefore, comply with the requirements of Articles 52 and 56 EPC.

7. As a result of the foregoing, the independent claims according to the main request and the first and second auxiliary requests could not form a basis for maintaining the patent in amended form, since their subject-matters are not regarded as inventive.

The Claims 2 and 3 according to these requests depend on the corresponding independent Claims 1 and can also not be maintained.

Order

For these reasons, it is decided that:

1. The impugned decision is set aside.
2. The patent is revoked.

The Registrar:



N. Maslin

The Chairman:



C.T. Wilson