

Internal distribution code:

- (A) [-] Publication in OJ
- (B) [-] To Chairmen and Members
- (C) [-] To Chairmen
- (D) [X] No distribution

**Datasheet for the decision
of 2 March 2022**

Case Number: T 1342/17 - 3.4.01

Application Number: 09726197.8

Publication Number: 2260502

IPC: H01J41/00

Language of the proceedings: EN

Title of invention:

COMBINED PUMPING SYSTEM COMPRISING A GETTER PUMP AND AN ION PUMP

Applicant:

SAES GETTERS S.p.A.

Headword:

Getter and Ion Pump Mount / SAES GETTERS

Relevant legal provisions:

EPC Art. 56

Keyword:

Inventive step - (yes)



Beschwerdekammern
Boards of Appeal
Chambres de recours

Boards of Appeal of the
European Patent Office
Richard-Reitzner-Allee 8
85540 Haar
GERMANY
Tel. +49 (0)89 2399-0
Fax +49 (0)89 2399-4465

Case Number: T 1342/17 - 3.4.01

D E C I S I O N
of Technical Board of Appeal 3.4.01
of 2 March 2022

Appellant: SAES GETTERS S.p.A.
(Applicant) Viale Italia, 77
20020 Lainate (Milano) (IT)

Representative: Concone, Emanuele
Società Italiana Brevetti S.p.A.
Via Carducci 8
20123 Milano (IT)

Decision under appeal: **Decision of the Examining Division of the
European Patent Office posted on 5 January 2017
refusing European patent application No.
09726197.8 pursuant to Article 97(2) EPC.**

Composition of the Board:

Chairman P. Scriven
Members: B. Noll
C. Almberg

Summary of Facts and Submissions

- I. The applicant appealed the decision by which the Examining refused the European patent application.
- II. The Examining Division held that the subject-matter claimed would have been obvious for the skilled person (Article 56 EPC).
- III. In the statement setting out the grounds of appeal, the appellant requested that the decision be set aside and that a patent be granted on the basis of the claims underlying the decision (main request) or a set of claims filed with that statement (auxiliary request).
- IV. In the preliminary opinion accompanying a summons to oral proceedings, the Board informed the appellant of its view that claim 1 of the main request failed to comply with Article 84 EPC as to the clarity of the term "flange". The Board further gave its view on inventive step for the auxiliary request.
- V. In a letter of response to the summons, the appellant withdrew the main request and maintained only the previous auxiliary request.
- VI. Oral proceedings were held before the Board by video-link, as requested by the appellant. During the oral proceedings, the appellant submitted an amended set of claims in replacement of its sole request previously on file. In effect, this deleted claim 2, the clarity of which the Board had questioned.

VII. The appellant's final request was that the decision under appeal be set aside and that a patent be granted on the basis of claims 1-8 of the sole request filed during oral proceedings before the Board.

VIII. Claim 1 reads as follows:

A combined pumping system (10) suitable to be connected to a vacuum chamber, said system (10) comprising a getter pump (12), an ion pump (13) and a flange (11) having an internal side and an external side, the internal side of the flange (11) being internal to the vacuum chamber when the pumping system (10) is connected to the vacuum chamber and the external side of the flange (11) being external to the vacuum chamber when the pumping system (10) is connected to the vacuum chamber, characterized in that said getter and ion pumps (12, 13) are mounted on the flange (11) and arranged on the internal side of said flange (11) at two different points thereof.

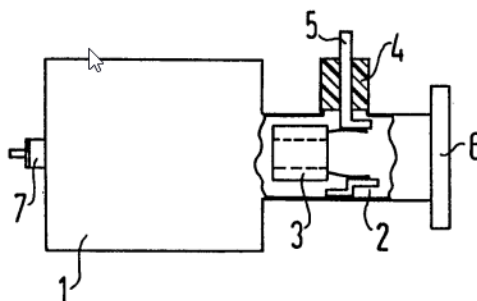
IX. The following documents are relevant for this decision.

D1: GB 2164788 A
D7: EP 0238297 A2

Reasons for the Decision

1. The invention relates to a high-vacuum pump system. Using ion or getter pumps was well known in high-vacuum technology, at the priority date of the application. In contrast to mechanical pumps, ion or getter pumps do not pump gas molecules out of the vacuum chamber, but rather bind them to a surface inside the vacuum space. They started operation only when the vacuum chamber has already been evacuated to a medium or fine vacuum.
2. D1 discloses a pump system with two pumps: a getter sorption pump 3, and an ion atomisation pump 1. These are getter and ion pumps, in the language of the application. They are mounted as a single unit forming a housing, with a flange 6 as shown in figure 1 of D1:

FIG 1



3. The flange 6 is provided for connecting the pump system to a chamber to be evacuated. It has one side facing the inner area of the chamber, when the pump system is mounted on it. In Figure 1, this is the right-hand side of flange 6. The flange also has an outer surface, which includes the parts of the flange surface that face the atmosphere when in use.

4. The pump system of claim 1 differs from that of D1 in that the getter and ion pumps are mounted at two different points on the internal side of the flange.
5. This arrangement results in a pump assembly which can be mounted on the vacuum chamber to be evacuated in the same way as the pump system in D1 via a flange, but which does not extend the space to be evacuated by an extra pump housing outside the vacuum chamber. As a result, the volume to be evacuated by the pumps is less than if a pump system shown in D1 were used. As a further result, the surface area of the volume to be evacuated is smaller than in D1, since there is no extra inner surface added by a pump housing as in D1.
6. The technical problem to be solved can, therefore, be formulated as providing a pump system which contributes to minimizing the volume and surface area to be evacuated.
7. D1 does not hint at mounting the pumps on a flange such that they are arranged on the internal side of the flange, thus inside the vacuum chamber when the pumping system is connected to the vacuum chamber. The skilled person would not, without hindsight, have arrived at the claimed pump system having regard to D1 alone or in combination with common general knowledge.
8. D7 discloses a gas pressure gauge in which two gauges of different types are arranged on the inner side of a single flange, so that they are simultaneously mounted on a vacuum chamber when the single flange is attached to it.
9. However, the skilled person could only have arrived at the claimed pump system by assuming that the pumps of

the system disclosed in D1 were mounted in the same manner as the gas pressure gauges in D7. There is, however, no suggestion in D1 of arranging the pumps other than in a separate housing. Further, there is no hint in D7 that other components than gas pressure gauges could be mounted inside the vacuum chamber on a separate flange. The skilled person might have considered other sorts of gauge, but ion and getter pumps were not something the person skilled in the field of D7 would have considered. The skilled person would, therefore, not have arrived at the claimed pump system without the benefit of hindsight.

10. For the above reasons, the subject-matter of claim 1 involves an inventive step and complies with 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 Examining Division with the order to grant a patent on the basis of
 - claims 1 to 8 according to the amended and sole request filed during oral proceedings before the Board,
 - the drawings as originally filed, and
 - the description to be adapted as necessary.

The Registrar:

The Chair:



D. Meyfarth

P. Scriven

Decision electronically authenticated