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**Datasheet for the decision
of 14 November 2008**

Case Number: T 1311/07 - 3.2.05

Application Number: 99920081.9

Publication Number: 1000291

IPC: F17C 7/04

Language of the proceedings: EN

Title of invention:

Fluid storage and dispensing system

Patentee:

ADVANCED TECHNOLOGY MATERIALS, INC.

Opponent:

Praxair, Inc.

Headword:

-

Relevant legal provisions:

EPC Art. 123(2)(3), 54, 56

Relevant legal provisions (EPC 1973):

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Keyword:

"Extension beyond the content of the application as filed
(no)"

"Extension of the scope of protection (no)"

"Novelty (yes)"

"Inventive step (yes)"

Decisions cited:

-

Catchword:

-



Case Number: T 1311/07 - 3.2.05

D E C I S I O N
of the Technical Board of Appeal 3.2.05
of 14 November 2008

Appellant: ADVANCED TECHNOLOGY MATERIALS, INC.
(Patent Proprietor) 7 Commerce Drive
Danbury, CT 06810 (US)

Representative: Avery, Stephen John
Hoffmann Eitle
Patent- und Rechtsanwälte
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Decision under appeal: Interlocutory decision of the Opposition
Division of the European Patent Office posted
26 July 2007 concerning maintenance of European
patent No. 1000291 in amended form.

Composition of the Board:

Chairman: W. Zellhuber
Members: P. Michel
M. J. Vogel

Summary of Facts and Submissions

- I. The patent in suit was maintained by the opposition division in amended form in accordance with a first auxiliary request of the patentee. The opposition division was of the opinion that claims 1 and 14 of the main request did not satisfy the requirements of Article 123(2) EPC.
- II. The appellant (patentee) appealed against this decision. A former appellant and opponent (Praxair, Inc.) withdrew their opposition and appeal with a letter dated 16 July 2008.

The appellant requests that the decision under appeal be set aside and the patent be maintained in amended form on the basis of a main request, filed as first auxiliary request (modified) on 22 September 2008; or first and second auxiliary requests, filed as second and third auxiliary requests respectively on 4 December 2007.

- III. Claims 1 and 12 of the main request read as follows:

"1. A semiconductor manufacturing fluid storage and dispensing device (10, 110, 300) comprising:
a fluid storage and dispensing vessel (12, 112, 302) defining an interior volume (15, 328) for holding a pressurized fluid and having an outlet port; and
a pressure regulator (26, 332) mounted in the interior volume (15, 328) of said vessel in communication with said port for regulating the pressure of the gas dispensed from said vessel, said regulator including a valve, characterized by :

said valve being held closed to prevent fluid from being dispensed from said vessel (12, 112, 302) through said port until said pressure regulator receives gas at subatmospheric pressure through said port from downstream thereof, and opening in response to the receipt of said sub-atmospheric pressure gas; and
said sub-atmospheric gas pressure having no more than a predetermined magnitude."

"12. A method of manufacturing a semiconductor product utilizing a semiconductor process fluid contained in a pressurized vessel (12, 112, 302) having an interior volume (15, 328) containing said fluid,
characterized in that

said fluid is confined in said interior volume by a pressure regulator (26, 332) in said interior volume in a fluid flow path (334, 336, 332, 330, 320) closed by said pressure regulator to fluid flow downstream of said pressure regulator,

selectively dispensing the confined fluid by opening the fluid flow path through and downstream from said pressure regulator, discharging fluid at a rate determined by the fluid pressure regulator, and

conducting said fluid to a semiconductor manufacturing facility (200),

said dispensing step comprising supplying gas to said pressure regulator at or below a specified sub-atmospheric pressure through said fluid flow path from downstream thereof, said pressure regulator being set to regulate the pressure of the fluid being dispensed to said sub-atmospheric pressure."

IV. The following documents are referred to in the present decision:

D1: US-A-4,793,379

D7: FR-A-1,575,424

V. The arguments of appellant I in connection with the main request can be summarised as follows:

The application as filed discloses various types of regulator, and a poppet valve is just one example of a valve which may be employed. Claim 1 does not refer to a signal, but merely sets out the condition which must obtain for the valve to open.

The receipt of gas pressure and the receipt of gas cannot be distinguished. Various passages of the application as filed disclose opening of the valve in response to gas received from outside the vessel, that is, from downstream of the vessel.

It is implicit in claim 12 that the supplied gas originates from downstream of the pressure regulator.

Claim 2 does not define a valve with binary open and closed states, but rather a valve having a variable opening.

The subject-matter of claim 5 is disclosed in claim 35 as filed. There is no reason why the claim should be restricted to a vessel having an adsorbent material.

The amendments to the claims thus satisfy the requirement of Article 123(2) EPC.

The pressure regulator disclosed in document D1 is, in use, screwed into the neck portion of a pressure vessel. In this state, the valve will be positioned within the threaded neck portion of the vessel and not in the interior volume of the vessel.

The subject-matter of claim 1 is thus new.

In the arrangement of document D1, the valve is not so effectively protected as in the arrangement specified in claim 1. The cited prior art does not suggest modifying the device of document D1 in the manner specified in claim 1 so as improve impact protection.

The subject-matter of claim 1 thus also involves an inventive step.

VI. The arguments of former appellant and opponent, as far as relevant in connection with the main request can be summarised as follows:

The feature of claim 1 as granted, according to which "said valve receives gas at subatmospheric pressure" has been omitted, the amended claim referring to the pressure regulator rather than the valve. The amendment of the claim thus does not satisfy the requirement of Article 123(3) EPC.

According to the application as filed, the valve of the regulator is a poppet valve. There is no disclosure of any other form of valve. In addition, there is no disclosure of a valve operating in response to a signal representative of a set pressure. The original application thus does not disclose a valve which is not

necessarily a poppet valve and which is not necessarily part of the regulator.

The receipt of gas pressure must be distinguished from the receipt of gas. Pressure does not require a gas flow, so there is no disclosure of gas being received at a set pressure. There is also no disclosure of sub-atmospheric gas pressure being received from anywhere outside the vessel.

Claim 12 does not specify the source of the supplied gas or that the dispensing step is initiated by a signal.

Claim 2 relates to a two position regulator valve which is not disclosed in the application as filed. The subject-matter of claim 5 is also not disclosed in the application as filed.

The amendments to the claims thus do not satisfy the requirement of Article 123(2) EPC.

Document D1 discloses a valve as shown in Figure 4 which, when mounted on a gas cylinder, will result in the pressure regulator being mounted in the interior volume of the cylinder. The subject-matter of claims 1 and 12 is thus not new.

Document D1 is regarded as the closest prior art. The problem to be solved is to find an alternative location for the pressure regulator which provides for impact protection. The solution to this problem as defined in claims 1 and 13 is obvious in the light of the common general knowledge of the person skilled in the art or

alternatively in the light of the disclosure of document D7.

Thus, even if document D7 is regarded as not disclosing a pressure regulator mounted in the interior volume of the cylinder, nevertheless, the subject-matter of claims 1 and 12 does not involve an inventive step.

Reasons for the Decision

1. *Main Request*

1.1 Amendments

1.1.1 Article 123(3) EPC

Whilst claim 1 specifies that "said pressure regulator receives gas at subatmospheric pressure", claim 1 as granted specifies that "said valve receives gas at subatmospheric pressure". However, claim 1 as granted does not distinguish between the valve and the pressure regulator, so that the scope of the claim has not been broadened.

The amendments to the claims thus comply with the requirements of Article 123(3) EPC.

1.1.2 Article 123(2) EPC

Claims 1 and 12 do not specify that the valve of the regulator is a poppet valve. However, the application as originally filed, for example at page 30, lines 14 to 21, indicates that the valve need not be in the form

of a poppet valve and that it is merely necessary for the valve to be opened and closed in response to gas pressure acting on the regulator.

The feature of claim 1 "said valve being held closed to prevent fluid from being dispensed from said vessel (12, 112, 302) through said port until said pressure regulator receives gas at subatmospheric pressure through said port from downstream thereof, and opening in response to the receipt of said sub-atmospheric pressure gas", and the corresponding feature of claim 12 are regarded as being disclosed in the application as filed at page 8, lines 18 to 22; page 19, lines 5 to 11 and page 23, lines 10 to 17, the passages on pages 8 and 23 referring specifically to the regulator being set to a subatmospheric pressure.

It is also clear in the application as filed that the pressure regulator serves to confine the fluid in the interior volume of the vessel, regardless of which components of the regulator are involved in this function. The feature of claim 12 according to which "said fluid is confined in said interior volume by a pressure regulator (26, 332) in said interior volume in a fluid flow path (334, 336, 332, 330, 320) closed by said pressure regulator to fluid flow downstream of said pressure regulator" is thus also disclosed in the application as filed.

The reference in claim 12 to "supplying gas to said pressure regulator at or below a specified sub-atmospheric pressure" is regarded as implicitly referring to gas from downstream of the regulator.

At page 8, lines 18 to 22, of the application as filed, it is disclosed that the regulator can be set to a predetermined pressure level. The subject-matter of claim 5 is disclosed at page 20, lines 11 to 19 of the application as filed. The use of the specified gases is not disclosed as being necessarily in combination with the presence of an adsorbent material. The subject-matter of claims 2 and 5 is thus also disclosed in the application as filed.

As regards the remaining issues in connection with Article 123(2) EPC, the Board sees no reason to depart from the decision of the Opposition Division in connection with the auxiliary request.

The amendments to the claims thus comply with the requirements of Article 123(2) EPC.

1.2 Novelty

Figure 4 of document D1 shows a flow control valve incorporating a pressure regulator which is provided with a threaded lower end for mounting on a gas cylinder. In the absence of any disclosure to the contrary, the gas cylinder must be assumed to be a conventional gas cylinder. However, in the mounted state of the valve on a conventional gas cylinder, the pressure regulator would not be mounted in the interior volume of the cylinder, but at the upper end of the threaded neck thereof. In this connection, it may be noted that the term "interior volume" is construed as being the space within the cylinder available for storage of gas, and not the space within the neck, which is occupied by a closure member.

The subject-matter of claims 1 and 12 is thus new.

1.3 Inventive Step

The closest prior art is represented by document D1.

The positioning of the pressure regulator in the interior volume of the cylinder results in an improved protection of the device against impacts.

Document D7 does not provide any encouragement to the person skilled in the art to move the pressure regulator from the position disclosed in document D1 to within the interior volume of the vessel. In the case of document D7, the reasons for positioning the pressure reduction valve within the gas bottle, as set out at page 1, lines 11 to 32, are not applicable to the storage vessel of the patent in suit.

The remaining cited prior art also does not suggest moving the pressure regulator from the position disclosed in document D1 to within the interior volume of the vessel in order to improve the protection of the device against impacts.

The subject-matter of claims 1 and 12 thus involves an inventive step. Claims 2 to 11 and 13 to 15 are dependent from claims 1 and 12 respectively and relate to preferred features of the device of claim 1 or the method of claim 12. The subject-matter of these claims thus also involves an inventive step.

2. Since the main request of the respondent is allowable, it is not necessary to consider the auxiliary requests.

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 maintain the patent on the basis of the following documents:
 - (a) claims 1 to 15 as filed on 22 September 2008 as first auxiliary request (modified);
 - (b) description, pages 2 to 12 as filed on 22 September 2008 as first auxiliary request (modified);
and
 - (c) drawings, pages 17 to 21 of the patent as granted.

The Registrar:

The Chairman:

D. Meyfarth

W. Zellhuber