

The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.

Paper No. 23

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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Ex parte TAKASHI KABASAWA,  
MANABU NONAKA and TAKASHI OKADA

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Appeal No. 2003-1141  
Application 09/572,745

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ON BRIEF

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Before COHEN, MCQUADE, and NASE, Administrative Patent Judges.  
MCQUADE, Administrative Patent Judge.

DECISION ON APPEAL

Takashi Kabasawa et al. appeal from the final rejection of claims 1, 3 through 11, 13 through 16 and 21 through 29, all of the claims pending in the application.

THE INVENTION

The invention relates to a vacuum pump which can be used, for example, to evacuate a semiconductor processing chamber.

Representative claim 1 reads as follows:<sup>1</sup>

1. A vacuum pump comprising:  
a casing having an inlet port;  
a rotor shaft mounted in the casing for undergoing rotation in a rotational direction about a rotational axis;  
exhaust means disposed between the rotor shaft and the casing for undergoing rotation with the rotor shaft about the rotational axis to discharge gas molecules which are taken in through the inlet port of the casing;

a rotational member disposed between the inlet port and the exhaust means and mounted for undergoing rotation with the rotor shaft about the rotational axis, the rotational member having a generally conical-shaped surface gradually decreasing toward the inlet port; and

a plurality of guiding blades disposed on the conical shaped surface of the rotational member for undergoing rotation with the rotational member about the rotational axis to impart an outward motion component in a radial direction to the gas molecules which are taken in through the inlet port.

#### THE REJECTIONS

Claims 1, 10, 21 and 23 stand rejected under 35 U.S.C.

§ 102(b) as being anticipated by U.S. Patent No. 5,553,998 to Muhlhoff et al. (Muhlhoff).

Claims 3 through 9, 11, 13 through 16, 22 and 24 through 29 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Muhlhoff.

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<sup>1</sup> In the event of further prosecution, the appellants should correct the lack of proper antecedent basis for the term "the reflecting surface" in claim 15, and the examiner should consider whether the references to the "divisor" in claims 5, 27 and 28, and in the underlying specification, would be understood by one of ordinary skill in the art and, if not, make an appropriate objection and/or rejection.

Attention is directed to appellants' main and reply briefs (Paper Nos. 15 and 17) and to the examiner's answer (Paper No. 16) for the respective positions of the appellants and the examiner regarding the merits of these rejections.<sup>2</sup>

#### DISCUSSION

##### I. The 35 U.S.C. § 102(b) rejection

Muhlhoff discloses a gas friction vacuum pump having a plurality of differently configured pump stages which can be detachably connected to one another in various arrangements to adapt the pump for different applications. The Figure 3 embodiment relied on by the examiner comprises a filling stage 35 and a molecular pump stage 3, 12. The filling stage includes an outer housing section 36 having a reducer 5 welded thereto and a rotor section 37 composed of a conically configured central part 38 and webs 39. The molecular pump stage includes an outer cylinder 3 and a rotor 9 composed of a hub 11, radial webs 22 and a cylindrical section 12.

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<sup>2</sup> In the final rejection (Paper No. 8), claims 1, 3 through 11, 13 through 16 and 21 through 29 also stood rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 3,157,793 to Adkins. Upon consideration of the arguments advanced in the main brief, the examiner has withdrawn this rejection (see page 3 in the answer).

Appeal No. 2003-1141  
Application 09/572,745

Anticipation is established only when a single prior art reference discloses, expressly or under principles of inherency, each and every element of a claimed invention. RCA Corp. v. Applied Digital Data Sys., Inc., 730 F.2d 1440, 1444, 221 USPQ 385, 388 (Fed. Cir. 1984). It is not necessary that the reference teach what the subject application teaches, but only that the claim read on something disclosed in the reference, i.e., that all of the limitations in the claim be found in or fully met by the reference. Kalman v. Kimberly Clark Corp., 713 F.2d 760, 772, 218 USPQ 781, 789 (Fed. Cir. 1983), cert. denied, 465 U.S. 1026 (1984).

As framed and argued by the appellants (see pages 8 through 14 in the main brief and pages 2 through 4 in the reply brief), the dispositive issue with respect to the anticipation rejection of independent claims 1 and 10 and dependent claims 21 and 23 is whether Muhlhoff meets the limitation in claim 1 requiring the rotational member to be "disposed between the inlet port and the exhaust means," and the corresponding limitation in claim 10 requiring the rotational member to be "disposed between the inlet port and the rotor." The appellants do not dispute the examiner's finding that Muhlhoff's rotor section 37 constitutes a "rotational member" as recited in claims 1 and 10, but do submit

that this rotational member is not disposed as required by the claim limitations in question. The following passage from the reply brief fairly summarizes the appellants' point:

in Muhlhoff the rotational section 37 is disposed between the reducer 5 and the rotor 9. In contrast, each of independent claims [1 and 10] requires a rotational member disposed between the inlet port and the exhaust means . . . or between the inlet port and the rotor . . . .

The foregoing patentable distinction between claims [1 and 10] and Muhlhoff concerning the location of the rotational member is significant because of the negative effect that the reducer 5 has on the operation of Muhlhoff's friction vacuum pump. More specifically, as noted in the main brief (pgs. 11-12), in Muhlhoff's friction vacuum pump, the flow of gas molecules taken in through the inlet port is interrupted in a dead space defined by the reducer 5 where the rotor section 37 is not located. As a result, the amount of gas molecules entering the webs 39 and flowing around the outer surface of the rotor 9 is decreased, thereby decreasing the exhaust efficiency of the friction vacuum pump [pages 3 and 4].

The appellants' position here is not well taken. To begin with, the record is devoid of any evidence supporting the assertion by the appellants that Muhlhoff's reducer 5 produces a "dead space" which interrupts the flow of gas molecules taken in through the pump's inlet port at the top of the reducer. Moreover, claims 1 and 10 do not include any limitation which excludes, or is otherwise inconsistent with, Muhlhoff's reducer 5 and any dead space which may be associated therewith. The argued limitations merely call for the rotational member to be disposed

between the pump's inlet port and the exhaust means or rotor. These limitations find full response in Muhlhoff's rotational member (rotor section 37) which is disposed between the inlet port at the top of the reducer 5 and the exhaust means or rotor 9.

Thus, the appellants contention that the subject matter recited in claims 1, 10, 21 and 23 distinguishes over Muhlhoff is unpersuasive. We shall therefore sustain the standing 35 U.S.C. § 102(b) rejection of these claims as being anticipated by Muhlhoff.

II. The 35 U.S.C. § 103(a) rejection

Independent claim 28, which is generally similar to independent claims 1 and 10, requires a rotational member which is disposed between an inlet port and exhaust means, and which is disk-shaped having a planar surface with a plurality of guiding blades disposed thereon. The examiner has not explained, and it is not apparent, how or why Muhlhoff teaches or would have suggested a vacuum pump having such a rotational member.

Accordingly, we shall not sustain the standing 35 U.S.C. § 103(a) rejection of claim 28, and dependent claim 29, as being unpatentable over Muhlhoff.

Appeal No. 2003-1141  
Application 09/572,745

Claims 6 and 26, which depend directly and indirectly from independent claim 1, and claim 11, which depends directly from independent claim 10, recite that the pump casing has an inner wall portion gradually decreasing in diameter toward the inlet port and that guiding blades associated with the rotational member are disposed in the casing at a position corresponding to a space in the casing surrounded by the inner wall portion. Here again, the examiner has failed to explain, and it is not evident, how or why Muhlhoff teaches or would have suggested a vacuum pump comprising this arrangement.

Thus, we shall not sustain the standing 35 U.S.C. § 103(a) rejection of claims 6, 11 and 26 as being unpatentable over Muhlhoff.

We shall sustain, however, the standing 35 U.S.C. § 103(a) rejection of dependent claims 3 through 5, 7 through 9, 13 through 16, 22, 24, 25 and 27 as being unpatentable over Muhlhoff since the appellants have not challenged such with any reasonable specificity, thereby allowing these claims to stand or fall with their respective independent claims (see In re Nielson, 816 F.2d 1567, 1572, 2 USPQ2d 1525, 1528 (Fed. Cir. 1987)).

Appeal No. 2003-1141  
Application 09/572,745

SUMMARY

The decision of the examiner to reject claims 1, 3 through 11, 13 through 16 and 21 through 29 is affirmed with respect to claims 1, 3 through 5, 7 through 10, 13 through 16, 21 through 25 and 27, and reversed with respect to claims 6, 11, 26, 28 and 29.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a).

AFFIRMED-IN-PART

IRWIN CHARLES COHEN	)	
Administrative Patent Judge	)	
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JOHN P. MCQUADE	)	
Administrative Patent Judge	)	INTERFERENCES
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JEFFREY V. NASE	)	
Administrative Patent Judge	)	

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Appeal No. 2003-1141  
Application 09/572,745

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