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

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte CORD SCHARSACK

Appeal 2006-3268
Application 10/479,696
Technology Center 3700

Decided: March 28, 2007

Before BRADLEY R. GARRIS, CHARLES F. WARREN and THOMAS A. WALTZ, *Administrative Patent Judges*.

GARRIS, *Administrative Patent Judge*.

DECISION ON APPEAL

Appellant appeals the final rejection of claims 13-30 under 35 U.S.C. § 134. We have jurisdiction over the appeal pursuant to 35 U.S.C. § 6(b).

We AFFIRM-IN-PART.

INTRODUCTION

Appellant invented a device and method for metering a reducing agent, particularly urea or a urea-water solution as a catalytic exhaust gas treatment (Specification 1). The device includes a metering device attached at an end of a reducing agent line (Claim 13). The metering device has a pressure recording element coupled to an output side of the metering device (Claim 13). The pressure recording element may be either pneumatic or electric (Figure 1, ref. no. 13; Figure 2, ref. no. 70). The pressure recording element controls a relief valve (Figures 1 and 2, ref. no. 11) to determine the proper pressure and amount of urea to supply to the input side of the metering device so that the pressure drop across the metering device is constant (Specification 3: 14-18; 5: 8-12). Claims 13, 20, 21, 22, 25, and 26 are illustrative:

13. A device for metering a reducing agent comprising:

means for supplying the reducing agent into a catalytic converter system via a line for removing nitrogen oxides from exhaust gases;

a metering device situated at an end of the line;

a pressure recording element recording pressure changes at an output side of the metering device facing away from the line; and

means for regulating a pressure of the reducing agent in the line, the means for regulating being adapted to interact with the pressure recording element, so that the pressure changes have an influence on the pressure regulation.

20. The device according to claim 19, wherein the relief valve has a pneumatic connection, the pressure recording element has an additional line

connected to the relief valve, and the additional line is connected to the pneumatic connection.

21. The device according to claim 13, wherein the pressure recording element includes a pressure sensor.

22. The device according to claim 21, further comprising a regulator connected to the pressure sensor and integrated into a control unit which is adapted to control the means for regulating and the metering device as a function of the pressure changes.

25. The device according to claim 13, wherein the metering device is mounted on an exhaust gas pipe that leads to the catalytic converter system, the output side of the metering device facing away from the line penetrating into the exhaust gas pipe.

26. A method for metering a reducing agent comprising:

supplying the reducing agent in a metered manner to a catalytic converter system for a removal of nitrogen oxides from exhaust gases with the aid of a metering device,

regulating a pressure of the reducing agent; and

recording pressure changes at a side of the metering device facing the catalytic converter system, the pressure changes having an influence on the pressure regulation.

The Examiner relies on the following prior art reference as evidence of unpatentability:

Hofmann	US 6,273,120 B1	Aug. 14, 2001

The rejections as presented by the Examiner are as follows:

1. Claim 20 is rejected under 35 U.S.C. § 112, 1st ¶, as failing to comply with the enablement requirement. According to the Examiner, the

claim contains subject matter which was not described in the Specification in such a way as to enable one skilled in the art to which is pertains, or with which it is most nearly connected, to make and/or use the invention.

2. Claims 13-19 and 21-30 are rejected under 35 U.S.C. § 102(e) as being unpatentable over Hofmann.

Rather than reiterate the respective positions advocated by the Appellant and by the Examiner concerning these rejections, we refer to the Brief and the Reply Brief, and to the Answer respectively for a complete exposition thereof.

Appellant separately argues claims 13, 20, 21, 22, 25, and 26. Accordingly, we address those claims in our opinion below.

OPINION

35 U.S.C. § 112, 1st ¶: FAILURE TO COMPLY WITH THE ENABLEMENT REQUIREMENT

Claim 20, which ultimately depends on claim 13, requires that the claim 13 "means for regulating a pressure" includes a relief valve having "a pneumatic connection, the pressure recording element has an additional line connected to the relief valve, and the additional line is connected to the pneumatic connection."

The Examiner rejected claim 20 under § 112, 1st ¶, as failing to comply with the enablement requirement. The Examiner stated that Appellant's claim 13 only encompasses Appellant's Figure 2 embodiment (i.e., the electrical pressure sensor embodiment), which does not have a

"pneumatic connection" and an "additional line" connected to the pneumatic connection (Answer 3). The Examiner determined that "claims 13 and 20 cannot . . . [include Appellant's] Figure 1 [embodiment]" (i.e., the pneumatic embodiment) because "Figure 1 does not have 'a pressure recording element recording pressure changes at an output side of the metering device facing away from the line'" as recited in claim 13 (Answer 3).

Appellant argues that the Examiner has failed to show that undue experimentation would be required to make or use the invention recited in claim 20 (Br. 4). Appellant contends that the Examiner failed to address any of the factors delineated by the United States Court of Appeals for the Federal Circuit in *In re Wands*, 858 F.2d 731, 737, 8 USPQ2d 1400, 1404 (Fed. Cir. 1988), for determining whether a specification satisfies the enablement requirement (Br. 4). Appellant also argues that his Specification discloses that "pressure recording element" recited in claim 13 includes a "pneumatic pressure recording element, such as in the form a line 12 connected to pneumatic connection 13, *illustrated in Figure 1*" (Br. 5). Appellant argues that "line 12 records the pressure changes in the mixing chamber 8, which is at an output side of the metering device 7" (Br. 5).

We agree with Appellant that claim 20 satisfies the enablement requirement of 35 USC § 112, 1st ¶.

A determination of whether a claimed invention is enabled is a question of law based on underlying factual findings. *In re Vaeck*, 947 F.2d 488, 495, 20 USPQ2d 1438, 1444 (Fed. Cir. 1991); *Atlas Powder Co. v. E.I. du Pont de Nemours & Co.*, 750 F.2d 1569, 1576, 224 USPQ 409, 413 (Fed. Cir. 1984). The standard for determining whether the specification meets

the enablement requirement is whether the experimentation needed to practice the invention is undue or unreasonable. *Mineral Separation v. Hyde*, 242 U.S. 261, 270 (1916), cited in *In re Wands*, 858 F.2d 731, 737, 8 USPQ2d 1400, 1404 (Fed. Cir. 1988). Accordingly, even though the statute does not use the term "undue experimentation," it has been interpreted to require that the claimed invention be enabled so that any person skilled in the art can make and use the invention without undue experimentation. *Wands*, 858 F.2d at 737, 8 USPQ2d at 1404.

Appellant's claim 13 recites ". . . a pressure recording element recording pressure changes at an output side of the metering device . . .." Appellant's Specification describes how the pressure recording may be accomplished with either a pneumatic "line 12" or an electrical "pressure sensor 70" (Specification 4: 20-26). The pneumatic pressure recording element uses "line 12" to sense variations in pressure in mixing chamber 8 and to convey the sensed pressure variation relief valve 11. Similarly, Appellant's Figure 2 embodiment (i.e., electrical embodiment) uses "pressure sensor 70" as the pressure recording element to sense pressure variations in mixing chamber 8 and to convey the sensed pressure variation to relief valve 11 via controller 40. In either the pneumatic or electrical pressure recording element embodiment, the pressure is "recorded" to the extent that the pressure value or variation is used to control relief valve 11.

The Examiner provides a dictionary definition of "record" or "recording" (i.e., "to indicate, read;" "to give evidence of") (Answer 7) in an attempt to demonstrate that only Appellant's Figure 2 embodiment (i.e., the electrical pressure recording element embodiment) is included in claim 13.

However, we agree with Appellant's argument that the Figure 1 pneumatic pressure recording element embodiment satisfies the Examiner's definition of "record" or "recording" (Reply Br. 2), such that claim 13 is generic to either the pneumatic or electrical pressure recording element embodiment.

Moreover, the Examiner has not established that undue experimentation would be required to make or use Appellant's invention recited in claim 20. The extent of the Examiner's explanation of the rejection is that claim 13 is limited to Appellant's Figure 2 embodiment (i.e., the electrical pressure recording element embodiment) which does not have a "pneumatic connection 13" or "additional line" connected to the pneumatic connection (Answer 3). The Examiner has not addressed any of the factors delineated in the *Wands* decision for determining whether Appellant's disclosure would require undue experimentation to make or use the claimed invention. *Id.*

For the above reasons, we conclude that claim 20 satisifes the enablement requirement of 35 USC § 112, 1st ¶. Accordingly, we reverse the Examiner's § 112, 1st ¶ rejection of claim 20.

35 U.S.C. § 102(e): REJECTION OVER HOFMANN
CLAIMS 13, 21, AND 26

Device claim 13 recites, in relevant part, "a pressure recording element recording pressure changes at an output side of the metering device facing away from the line" and "the means for regulating being adapted to interact with the pressure recording element, so that the pressure changes

have an influence on the pressure regulation." Device claim 21 further recites "the pressure recording element includes a pressure sensor."

Method claim 26 recites, in relevant part, "recording pressure changes at a side of the metering device facing the catalytic converter system, the pressure changes having an influence on the pressure regulation."

Regarding claims 13 and 26, the Examiner found that Hofmann's control valve 50 interacts with pressure P2 (i.e., pressure recording element according to the Examiner) to control the operation of valve 50 (Answer 3-4). Regarding claim 21, the Examiner stated that Hofmann discloses a pressure sensor P2 as shown in Figure 1 (Answer 4).

Regarding claims 13 and 26, Appellant argues that control valve 50 interacts with pressure Pg, not P2 (Br. 6). Appellant further argues that pressure Pg is not measured at an output side of the metering valve 16, such that "at no point does the valve 50 interact with a pressure prevailing at the output side [i.e., P2] of the valve 16" (Br. 6, 7). Appellant contends that Hofmann does not disclose "a pressure recording element recording pressure changes *at an output side of a metering device* and with which a means for regulating a pressure of a reducing agent interacts so that pressure changes have an influence on the pressure regulation" (Br. 7).

The Examiner responds that Hofmann discloses "the pressure detected at P2 is directly influenced by a change in the air pressure Pg" (Answer 9). The Examiner further states that any drop in Pg also results in a drop in P2, and to keep a pressure difference (P2-P1) across valve 16 constant, control valve 50 is operated to increase a part of the urea recirculated through the branched line 52 in order to obtain a correspondingly lower pressure P1

(Answer 9). The Examiner states that from these disclosures Hofmann's control valve 50 interacts with the pressure P2 detected at an outlet of the metering valve 16 (Answer 9).

Appellant responds that Hofmann provides no recording element for recording the pressure P2 and its changes such that the recorded P2 value is used to influence pressure regulation (Reply Br. 4).

Regarding claim 21, Appellant argues that in Hofmann P2 corresponds to the pressure prevalent on the outlet-side of metering valve 16, not a pressure sensor (Br. 8).

The Examiner responds that a pressure sensor is inherently disclosed in Hofmann because Hofmann discloses carefully controlling the metering valve inlet-side pressure P1, metering valve outlet-side pressure P2 and gas pressure Pg (Answer 9-10).

We agree with the Examiner that claims 13, 21, and 26 are anticipated by Hofmann.

Like Appellant in his Figures 1, 2 and 4, Hofmann uses the dashed-line draftsman convention to show a control connection between the mixing chamber 4, pressure control valve 50, and pressure accumulator 22 (Hofmann, Figure 1). We find Hofmann's dashed control line indicates pneumatic control of valve 50 (Hofmann, col. 3, ll. 25-27; col. 4, ll. 60-63). Pneumatic controls use a gas to sense and provide variations in pressure to control a device. Hofmann discloses that gas pressure Pg is the control pressure that regulates the pressure control valve 50 such that the pressure drop (P2-P1) across metering valve 16 is maintained constant (Hofmann, col. 5, ll. 5-27).

The pressure P2 approximates the pressure in mixing chamber 4 and is influenced by the pressure Pg (Hofmann: col. 4, ll. 25-28; col. 5, ll. 12-15). Accordingly, pressure P2 and Pg are interdependent such that a change in one of them affects the other. Therefore, the pressure Pg controls pressure P2, and thus provides a measurement of the pressure P2.

From the foregoing, we find the "pressure recording element" in Hofmann's device constitutes the gas line 18 which provides pneumatic feedback of the pressure condition in the mixing chamber 4 (and hence pressure P2) to maintain the pressure drop (P2-P1) across the metering valve 16 constant. Thus, pressure P2 is pneumatically sensed, measured and recorded via interdependent pressure Pg, which is used to control the pressure control valve 50 such that the pressure drop (P2-P1) across the metering valve 16 is maintained constant.

Accordingly, Hofmann discloses Appellant's claim 13 feature "a pressure recording element recording pressure changes at an output side of a metering device" and with which a "means for regulating a pressure of the reducing agent" interacts "so that the pressure changes have an influence on the pressure regulation." Moreover, Hofmann discloses Appellant's claim 26 feature "recording pressure changes at a side of the metering device facing the catalytic converter system, the pressure changes having an influence on the pressure regulation."

Furthermore, because Hofmann's gas line 18 acts to sense, measure and record pressure changes, we find that Hofmann discloses a "pressure sensor" (i.e., gas line 18) as claimed by Appellant in claim 21.

From the foregoing, we affirm the Examiner's § 102(e) rejection of argued claims 13, 21, and 26, and non-argued claims 14-19, 23-24, and 27-30 over Hofmann.

CLAIM 22

Appellant argues that since claim 22 depends from claim 21, claim 22 is not anticipated for the same reasons presented above that claim 21 is not anticipated (Br. 8). Moreover, Appellant argues that the Examiner has not met his burden of showing that Hofmann's device inherently contains a "control unit" (Br. 8).

The Examiner responds that typically sensors and valve actuators are connected to an electronic control unit (ECU) to receive signals from the sensors (Answer 10). The Examiner finds that it is inherent that Hofmann also has an ECU (i.e., control unit) to monitor the pressure changes and to control the valves in response to the pressure changes (Answer 10).

We agree with the Examiner that claim 22 is anticipated by Hofmann.

Hofmann expressly states that his device has "[a] control device 44 for controlling the reducing agent throughput in the reducing agent line 6 . . ." (Hofmann, col. 4, ll. 50-52). Hence, Hofmann's "control device 44" is construed as corresponding to Appellant's claimed "control unit."

Additionally, we find that Hofmann inherently must have a "control unit" for the device to be able to function. To achieve Hofmann's goal of maintaining a constant pressure drop across metering valve 16 (Hofmann, col. 5, ll. 15-17), a control unit would be necessary to monitor pressures and adjust control pressure valve 50 accordingly.

Since Hofmann discloses a "control unit" as recited in claim 22, we affirm the Examiner's § 102(e) rejection of claim 22 over Hofmann.

CLAIM 25

Appellant argues that Hofmann's metering device 16 is not "mounted on an exhaust gas pipe" as recited in claim 25 (Br. 9). We are unpersuaded by such an argument.

Hofmann clearly demonstrates in Figure 1 that metering valve 16 is "mounted on" exhaust duct 38 via atomizer 36. Appellant's claim 25 does not require a direct mounting of the metering valve of the metering device to the exhaust pipe. Therefore, any number of additional components (i.e., Hofmann's mixing chamber 4 and atomizer 36) may be interposed between Hofmann's metering valve 16 and the exhaust duct 38 and still satisfy the "mounted on an exhaust gas pipe" feature of Appellant's claim 25.

Since Hofmann discloses mounting a metering device on an exhaust pipe, we affirm the § 102(e) rejection of argued claim 25 over Hofmann.

OTHER CONSIDERATIONS

The Examiner rejected claim 20 only under 35 U.S.C. § 112, 1st ¶, as failing to satisfy the enablement requirement. No prior art rejection was ever made of claim 20. However, it appears that claim 20 is anticipated by Hofmann under § 102(e). Hofmann uses pneumatic controls via gas line 18 to regulate pressure control valve 50 and the pressure in metering device 16 (col. 3, ll. 24-30; col. 4, ll. 60-68; col. 5, ll. 1-27).

In any further prosecution of this application, the Examiner should consider a § 102(e) rejection of claim 20 over Hofmann.

DECISION

The Examiner's rejections of claims 13-19 and 21-30 under § 102(e) over Hofmann is AFFIRMED.

The Examiner's rejection of claim 20 under § 112, first paragraph, as lacking enablement is REVERSED.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(iv)(2006).

AFFIRMED-IN-PART

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