UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte RAYMOND D. MACWHINNIE, GARRY L. VAN HEEST,
and BRIAN M. IGOE

Appeal 2008-3607
Application 10/353,639
Technology Center 1700

Decided: August 6, 2008

Before BRADLEY R. GARRIS, ROMULO H. DELMENDO, and
JEFFREY B. ROBERTSON, *Administrative Patent Judges*.

ROBERTSON, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

Appellants appeal under 35 U.S.C. § 134(a) (2002) from the Examiner's rejection of claims 1, 7, 9, and 10.[1] (Examiner's Answer entered Aug. 9, 2007, hereinafter "Ans."). We have jurisdiction pursuant to 35 U.S.C. § 6(b) (2002).

We AFFIRM.

THE INVENTION

Appellants' claimed invention is directed to an apparatus for destruction of volatile organic compounds (VOCs). The apparatus includes a VOC collector; a thermodynamic destroyer that combusts a primary fue1 and also thermodynamically destroys the collected VOCs; a VOC transporter that transports the collected VOCs from the VOC collector to the thermodynamic destroyer; and a controller that controls the feed of collected VOCs upstream of the thermodynamic destroyer to ensure that the level of the collected VOCs fed to the thermodynamic transporter is below a predetermined limit. (Spec 5, l. 14 through 6, l. 23). The VOC transporter includes a device responsive to the controller for selectively combining collected VOCs with ambient air to maintain the level of the collected VOCs below the predetermined limit. (Spec 12, ll. 8-29). Appellants also claim an apparatus where the thermodynamic destroyer is an axial flow combustion turbine. (Spec. 6, ll. 7-23).

Claims 1 and 7, reproduced below, are representative of the subject matter on appeal.

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[1] Claims 2-6, 8, 11, and 12 have been cancelled. (Appeal Brief filed Apr. 11, 2007, hereinafter "App. Br.," 2).

1. An apparatus for destruction of volatile organic compounds, comprising:

a VOC collector that collects volatile organic compounds from at lease one source of VOCs;

a thermodynamic destroyer that thermodynamically destroys collected VOCs adapted to combust a primary fuel and operating to thermodynamically destroy collected VOCs by at least one of combusting collected VOCs which have been combined with the fuel and thermodynamically destroying collected VOCs which have been maintained separate from the primary fuel;

a VOC transporter that transports collected VOCs from the VOC collector to the thermodynamic destroyer, and

a controller that controls the feed of collected VOCs upstream of the thermodynamic destroyer to ensure that the level of the collected VOCs fed to the thermodynamic destroyer is below a predetermined limit;

wherein the VOC transporter includes a device, responsive to the controller, for selectively combining collected VOCs with ambient air to maintain the level of the collected VOC's below the predetermined limit.

7. An apparatus for destruction of volatile organic compounds, comprising:

a collector that collects volatile organic compounds (VOCs) from a VOC source;

an axial flow combustion turbine configured to combust a primary fuel and the collected VOCs;

a VOC transport system that transports the collected VOCs from the VOC collector the combustion turbine; and

> a controller that controls the VOC source to regulate a flow rate of collected VOCs to the combustion turbine so that the collected VOC level fed to the combustion turbine is below predetermined limits;
>
> wherein the VOC transporter includes a control device responsive to the controller to selectively combine collected VOCs with ambient air to control the collected VOC level fed to the combustion turbine.

THE REJECTIONS

The prior art relied upon by the Examiner in rejecting the claims on appeal is:

Maese	5,832,713	Nov. 10, 1998

The Examiner rejected claims 1, 7, 9, and 10 under 35 U.S.C. § 102(b) as being anticipated by Maese. The Examiner found that Maese discloses all the limitations of the claims. (Ans. 3-5). Regarding the recitation "controller[] for selectively combining collected VOCs with ambient air to maintain the level of the collected VOC's below the predetermined limit," the Examiner found that this limitation was directed to the manner of operating the device and did not impart structural limitations to the claims. (Ans. 4). The Examiner argues that Maese teaches a control system, which controls the apparatus to ensure stoichiometrically correct combustion. (Ans. 6). The Examiner also argues that the primary fuel inlet disclosed in Maese is capable of feeding additional air into the combustor to control the proper fuel and air ratio. (Ans. 6).

Appellants contend that Maese lacks any teaching of the claimed structural feature of the "device" or "control device" for selectively combining with ambient air. (App. Br. 4 and 5, Reply Brief filed September

28, 2007, herein after "Reply Br.," 3). Appellants additionally contend that the device of Maese must process whatever concentration of VOC is received in the inlet air without further dilution with ambient air. (App. Br. 4, Reply Br. 2). Appellants argue that Maese has no way of controlling the concentration of the VOC within the secondary fuel. (App. Br. 5). Appellants also argue that air that exits the compressor is the same flow stream as the inlet air, but in a compressed state, and not a "dilution" stream as interpreted by the Examiner. (App. Br. 5, Reply Br. 2). Appellants argue that primary fuel inlet is only a fuel outlet and therefore not capable of feeding additional air into the combustor to control the fuel to air ratio. (Reply Br. 2).

ISSUE

Have Appellants shown that the Examiner erred in rejecting the appealed claims as being anticipated by Maese?

FINDINGS OF FACT

The record supports the following findings of fact (FF) by a preponderance of the evidence.

1. Appellants' Specification states:

> Once the VOCs have been collected and the quantity of VOCs being transferred to the combustion system are monitored, it is important that the VOCs be blended with appropriate concentrations of ambient air to maintain the required mass flow to the combustion device and to keep the VOCs blend below predetermined LELs. Proper mixing is also critical to ensure that the air entering the combustion device is well mixed with the ambient air to eliminate any stratification and incomplete or premature combustion. Control devices 11 are incorporated into the system to allow for the introduction of

sufficient ambient air to keep the concentration of VOCs being transferred to the combustion device below predetermined LEL limits. Mixing devices are also incorporated into the transfer ducts to ensure that proper mixing occurs to eliminate any imbalanced mixing of constituents such as, for example, excessive variation in a constituent concentration relatively along the ducts or excessive variation in any desired stratification of constituents, and to ensure the desired flow of the mixed constituents for final measurement of VOCs concentrations prior to entering the combustion system. The control algorithm uses these final measured values to determine if all of the mixed constituents of the flow stream are within pre-established limits and can enter the injection phase of the process system. If the levels are too high, then the control algorithm will divert a portion of the total flow to a diverter duct 13. This by-pass duct will divert a pre-determined amount of flow, as established in the control algorithm, to a back-up control device 15 for subsequent destruction. (Spec. 12, ll. 8-24, as Amended on Aug. 22, 2006).

2. Figure 1 of Maese is reproduced below:

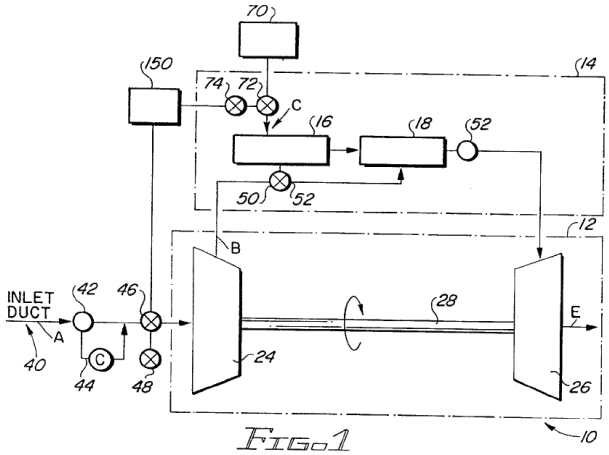

FIG. 1

Figure 1 depicts a destruction device (10) where inlet air A travels through control valve (46) into compressor (24) to form compressed air B, which is mixed with fuel C provided by primary fuel inlet (70) in

combustor (16), controlled by control system (150). (Col. 5, ll. 45-66, Col. 8, ll. 63-67).

3. Maese's compressor is not a device that inherently contains a source of ambient air to mix with inlet air A.

4. Maese does not disclose that primary fuel inlet (70) feeds additional air into the combustor to control the proper fuel and air ratio.

5. Maese states:

> As shown best in FIG. 1, a primary fuel inlet 70 provides primary fuel C to combustor 16 through a flow valve 72. Flow valve 72 preferably includes a monitor 74 to monitor the volume of fuel which is provided to combustor 16. (Col. 5, ll. 60-63).

6. Figure 6 of Maese is reproduced below:

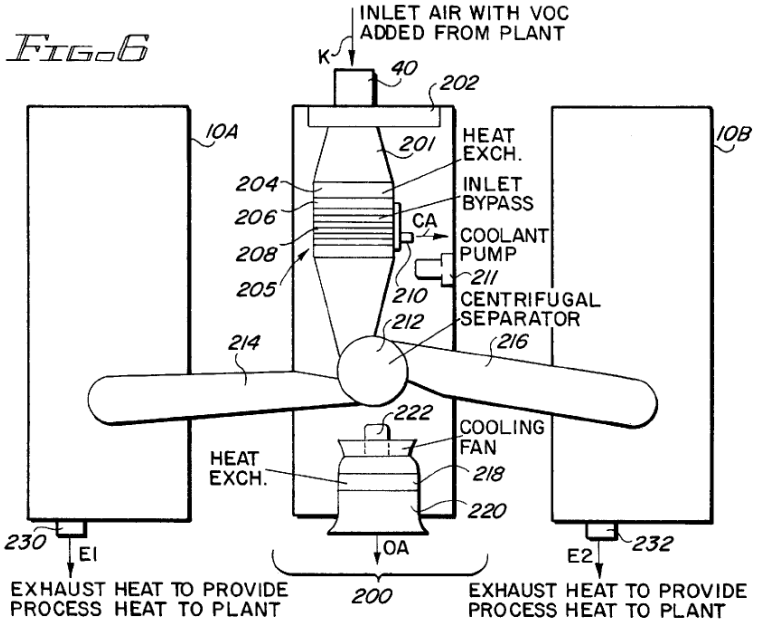

Figure 6 depicts a destruction device including an air treatment system (200), sensor(s) (206), inlet bypass device (208) that allows fresh air to

mix with VOC inlet air if the VOC level in the inlet air is unacceptable, and destruction devices (10A and 10B). (Col. 10, ll. 33-52).

7. The air treatment system is part of the VOC transporter as it is located between inlet duct (40) and destruction device(s) (10A, 10B). (Fig. 6).

8. Maese states:

> In accordance with this aspect of the present invention; an air treatment system 200 is advantageously employed and communicates with one or more destruction devices, for example respective destruction devices 10A and 10B. Destruction devices 10A and 10B are in a form similar to device 10 described above. (Col. 10, ll. 37-41).

9. Maese states:

> Preferably, one or more sensors 206 are suitably carried within chamber 203 for the purpose of determining the VOC level within inlet air A. (Col. 10, ll. 46-48).

10. Maese states:

> Preferably, control system 150 is a computer based system suitably configured and arranged to control, among other things, power generator 12 and fuel supply C, as well as inlet and outlet air from device 10. In general, control system 150 operates in a conventional manner to control power generator 12 including, among other things, compressor 24 and turbine 26. Further, in a conventional fashion, control system 150 operates to start device 10 initially and monitor operation of device 10 as device 10 begins to operate due to the burning of primary fuel A and secondary fuel C.
>
> Control system 150, however, differs from conventional gas turbine and other industrial engine controls in that system 150 operates to monitor and, as necessary, adjust fuel supplies A and C, as well an air control system 110 to achieve optimum levels of efficiency and ensure that device 10 safely and effectively remains operative. As previously noted, and with

> momentary reference to FIG. 1, control system communicates and utilizes information received from sensors 42, 48, 52, and 72. In addition, one or more sensors 152 may be utilized which are incorporated in proximity to or within reaction chamber 18 or combustor 16. (While sensor 152 is shown in FIG. 1 as being outside of both chamber 18 and combustor 16, its location is only illustrative of its position (or the positions) somewhere within fuel control system 14). In cooperation, these sensors provide information reflective of, among other things: VOC level in inlet air (e.g. sensor 48); temperature and flow rate of inlet air A, compressed air B, fuel C, mixed stream D and the like; fuel content and volume (e.g. sensor 74); power output from device 10; and speeds of turbine 26. With this and other information, control system suitably controls the operation of device 10. (Col. 9, ll. 32-64).

11. Device (208) is responsive to controller (150) through sensor (206).

PRINCIPLES OF LAW

"A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros., Inc. v. Union Oil Co.*, 814 F.2d 628, 631 (Fed. Cir. 1987), *cert. denied*, 484 U.S. 827 (1987). Analysis of whether a claim is patentable over the prior art under 35 U.S.C. § 102 begins with a determination of the scope of the claim. We "determine[] the scope of the claims in patent applications not solely on the basis of the claim language, but upon giving claims their broadest reasonable construction 'in light of the Specification as it would be interpreted by one of ordinary skill in the art.'" *Phillips v. AWH Corp.,* 415 F.3d 1303, 1317 (Fed. Cir. 2005), cert. denied 126 S. Ct. 1332 (2006) (quoting *In re Am. Acad. of Sci. Tech. Ctr.*, 367 F.3d

1359, 1364 (Fed. Cir. 2004)). The properly interpreted claim must then be compared with the prior art.

ANALYSIS

Appellants state that their arguments are applicable to all of the pending claims. (App. Br. 3). Accordingly, we confine our discussion to appealed claim 1 pursuant to 37 C.F.R. § 41.37(c)(1)(vii) (2006).

Initially, we disagree with the Examiner's finding that the recitation "controller, for selectively combining collected VOCs with ambient air to maintain the level of the collected VOC's below the predetermined limit" fails to impart structural limitations to the claimed invention. A patent applicant is free to recite features of an apparatus either structurally or functionally. *In re Schreiber*, 128 F.3d 1473, 1477-78 (Fed. Cir. 1997). In the present case, the recitation "for selectively combining collected VOCs with ambient air to maintain the level of the collected VOC's below the predetermined limit," is a functional limitation that modifies the "device responsive to the controller," and requires the device to have a source of ambient air to adjust the VOC level in the collected VOCs. (*See* FF 1).

Accordingly, Maese does not disclose a source of ambient air in the compressor to regulate the level of VOCs forming a "dilution compressed air B." Specifically, Figure 1of Maese shows that only inlet air A travels through control valve (46) into compressor (24). (FF 2). Thus, the compressor is not a device that inherently contains a source of ambient air to mix with inlet air A. (FF 3). Therefore, we disagree with the Examiner's finding that compressed air B is a diluted form of inlet air A. Further, there is no indication that primary fuel inlet (70) inherently feeds additional air

into the combustor to control the proper fuel and air ratio. (FF 4). Maese only indicates that inlet (70) is a primary fuel inlet, and does not disclose that the fuel inlet would inherently possess ambient air. (FF 5).

Nevertheless, we are of the opinion that Maese anticipates the present claims. Maese discloses an apparatus in Figure 6 that contains an air treatment system (200) and destruction devices (10A, 10B). (FF 6). The air treatment system is part of the VOC transporter as it is located between inlet duct (40) and destruction device(s) (10A, 10B). (FF 6 and 7). Devices 10A and 10B operate in similar fashion to device 10, i.e., a thermodynamic destroyer. (FF 8). Air treatment system (200) comprises a device (208) that allows fresh air to mix with inlet air A in situations where the VOC content of the inlet air A is determined to be too high. (FF 6). Regarding the presence of a controller, Appellants argue that Maese has no way of controlling the concentration of VOC within inlet air A. (App. Br. 4 and 5). However, Maese teaches that control system (150) uses information from the sensors employed in the apparatus, including information about VOC level in inlet air, to control the operation of the apparatus. (FF 10). Maese discloses that sensor (206) is used to determine the level of VOC in inlet A. (FF 9). Thus, device (208) is responsive to controller (150) through sensor (206). (FF 11). Devices 10A and 10B contain a thermodynamic destroyer that destroys the collected VOCs as discussed by the Examiner with reference to device 10. (Ans. 3 and 4). Therefore, Maese anticipates the present claims.

CONCLUSION

In light of the above discussion, Appellants failed to demonstrate that the Examiner erred in rejecting claims 1, 7, 9, and 10 under 35 U.S.C. § 102(b) as being anticipated by Maese. Because we have presented a modified rationale for the ground of rejection made by the Examiner, we designate this opinion as having presented a new ground of rejection pursuant to 37 C.F.R. § 41.50(b).

ORDER

The Examiner's decision to reject claims 1, 7, 9, and 10 under 35 U.S.C. § 102(b) as being anticipated by Maese is affirmed.

This decision contains a new ground of rejection pursuant to 37 C.F.R. § 41.50(b). 37 C.F.R. § 41.50(b) also provides that the Appellants, *WITHIN TWO MONTHS FROM THE DATE OF THE DECISION*, must exercise one of the following two options with respect to the new ground of rejection to avoid termination of the appeal as to the rejected claims:

> (1) *Reopen prosecution*. Submit an appropriate amendment of the claims so rejected or new evidence relating to the claims so rejected, or both, and have the matter reconsidered by the Examiner, in which event the proceeding will be remanded to the Examiner….
>
> (2) *Request rehearing*. Request that the proceeding be reheard under § 41.52 by the Board upon the same record….

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

AFFIRMED

NEW GROUND OF REJECTION (37 C.F.R. §41.50(b))

PL initials:
sld

SIEMENS CORPORATION
INTELLECTUAL PROPERTY DEPARTMENT
170 WOOD AVENUE SOUTH
ISELIN, NJ 08830