

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 MAURICE LACASSE

Appeal 2006-2816
Application 10/434,125
Technology Center 1700

Decided: May 22, 2007

Before, BRADLEY R. GARRIS, JEFFREY T. SMITH, and
LINDA M. GAUDETTE, *Administrative Patent Judges*.

GAUDETTE, *Administrative Patent Judge*.

DECISION ON APPEAL

This is an appeal from the Examiner's final rejection of claims 13, 23-28, 31, 32, and 36-65. We have jurisdiction over the appeal pursuant to 35 U.S.C. § 6(b).

Appellant's invention relates to a transportable water treatment system using filters and ozone. Independent Claim 13 is reproduced below:

13. A water treatment apparatus to purify water coming from an external water source as water flows in said apparatus, said water source containing unwanted particles and/or substances and/or having high levels of turbidity, said apparatus comprising:

a transportable housing which is adapted to be connected to said water source;

a first filter which removes a portion of said unwanted particles from said water source;

an ozone generator system which produces and provides ozone,

a mixer which mixes said ozone with said water source from said first filter;

a reactor which defines an inner chamber connected to said mixer and favors the molecular reaction of said water source from said first filter with said ozone to remove a significant portion of any remaining [sic] said unwanted particles and/or substances and inactivate another portion of the left said unwanted particles and/or substances;

a second filter which removes another portion of said unwanted particles and/or substances from said water source from said chamber;

a third filter, which comprises ozone resistant means and which lowers the turbidity level and lowers said ozone in said water source from said second filter;

a fourth filter which lower said inactivated unwanted particles and/or substances from said water source from said third filter.

The Examiner relies on the following prior art references to show unpatentability:

Mausgrover	US 5,427,693	Jun. 27, 1995
Gastman	US 5,711,887	Jan. 27, 1998
Conway	US 6,348,155 B1	Feb. 19, 2002
Mori	US 6,464,877 B1	Oct. 15, 2002

The Examiner made the following rejections:

1. Claims 49-62 under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement.¹
2. Claims 13, 23-28, 31, 32, 36, 38-50, 52-62, 64, and 65 under 35 U.S.C. § 103(a) as unpatentable over Gastman in view of Conway and Mori.
3. Claims 37, 51, and 63 under 35 U.S.C. § 103(a) as unpatentable over Gastman in view of Conway and Mori as applied to claims 13, 36, and 49 and further in view of Mausgrover.

ISSUES

I. The Examiner contends that the claim 49 recitation “wherein said disinfectant is absent of the purified water when said purified water exits said apparatus” is not supported by the original Specification and claims. Appellant contends that one of ordinary skill in the art would understand that disinfectant is absent when the purified water exits the

¹ The rejection of claim 65 under 35 U.S.C. § 112, first paragraph, has been withdrawn. (Answer 7).

apparatus because ozone concentration is continually lowered as the water exits the ozone resistant means. The issue for us to decide is “Would one of ordinary skill in the art have understood Appellant’s original Specification and claims as describing a water filtration apparatus in which water exiting the apparatus did not contain ozone?”

For the reasons discussed below, we answer this question in the negative.

II. The Examiner contends that it would have been obvious to one of ordinary skill in the art at the time of the invention to have used Mori’s ozone-resistant membrane filter in the Gastman/Conway water treatment apparatus to achieve the invention as claimed. Appellant contends that the Examiner has failed to explain the desirability of using Mori’s membrane filter in the Gastman/Conway water treatment apparatus, since the filter would be superfluous. The issue for us to decide is: “Has the Examiner identified a reasonable basis in the prior art for using Mori’s membrane filter in the Gastman/Conway water treatment apparatus?” If so, “Has Appellant provided sufficient evidence to overcome the Examiner’s prima facie showing of obviousness?”

For the reasons discussed below, we answer the first question in the affirmative, and further determine that the Appellant has failed to overcome the Examiner’s prima facie showing of obviousness.

Accordingly, we affirm as to all three grounds of rejection.

RELEVANT FINDINGS OF FACT

Specification

- 1) The Specification discloses a water purification system which uses ozone as a disinfectant and includes an ultra-micro-filtration membrane 170. The ultra-micro-filtration membrane 170 is described as comprising a water container entrance 172 opening to thousands of vertically extending capillaries 176 which are permeable to water. (Specification, 11).
- 2) Water filters out of the capillaries into the central channel 174, while the suspended particles which cause turbidity are retained inside the capillaries 176. (Specification, 11-12). The ultra-micro-filtration membrane 170 is thus said to “significantly reduce the turbidity level” in the water. (Specification, 11).
- 3) The ozone in the water entering the ultra-micro-filtration membrane 170 reacts with debris stuck on the capillary surfaces 176 thereby providing a level of self-cleaning to the ultra-micro-filtration membrane 170 and reducing the remaining concentration of ozone in the water. (Specification, 12).
- 4) The Specification states that in order for the self-cleaning feature to work, the membrane must be resistant to the ozone/disinfectant. (Specification, 12).

Gastman

- 5) Gastman relates to a process and transportable apparatus for the treatment of contaminated water with ozone to produce potable water. (Abstract, 1).

- 6) In Gastman's process, contaminated water is pumped to a first filter (organic whirlpool separator 12) for removal of silt, debris and other particles greater than about 70 microns. (Gastman, col. 6, ll. 59-65).
- 7) The contaminated water is then pumped through a series of columnar ozonation vessels 20 where ozone is diffused into the water. (Gastman, col. 6, l. 65-col. 7, l. 24). The ozone is prepared in situ in an ozone generator 86. (*See* col. 8, ll. 37-44).
- 8) Upon exiting the ozonation vessels 20, the water, containing from about 0.5 to 8.0 mg/l of ozone is transferred to a partitioned retention tank 40 to allow oxidation of pathogens, organic matter and other oxidizable material. (Gastman, col. 7, ll. 25-50).
- 9) Water from the retention tank 40 then flows to an ultraviolet radiation chamber 64 where it is subjected to ultraviolet radiation to catalyze the oxidation reactions of ozone, thereby oxidizing any residual oxidizable matter. (Gastman, col. 7, ll. 53-57). The water is also radiated to neutralize the ozone such that water exiting the ultraviolet radiation chamber 64 is "substantially free of ozone." (Gastman, col. 7, ll. 63-65).
- 10) After exiting the ultraviolet radiation chamber 64, the water is pumped through a first filter 66 to remove any particulates greater than about 10 microns in size and then pumped to an activated carbon filter medium 68 to remove residual odor, taste and color. (Gastman, col. 8, ll. 1-10).
- 11) Gastman teaches that "care should be exercised in selecting materials of construction that come into contact with ozone or highly ozonated water." (Gastman, col. 15, ll. 63-65).

- 12) Gastman states that the vessels and conduits that come into contact with ozonated water should be made of materials which are resistant to ozone oxidation. (Gastman, col. 15, l. 65-col. 16, l. 4).
- 13) Gastman discloses that “the system of the invention is extremely flexible and the process of using the system may be tailored for a particular contaminated water.” (Gastman, col. 16, ll. 27-29). Gastman contemplates, in particular, bypassing various vessels in the embodiment shown in Figure 1. (Gastman, col. 16, ll. 12-47).

Mori

- 14) Mori discloses a water treatment process in which ozone is added to raw water and filtered with an ozone-resistant membrane. (Mori, col. 5, ll. 3-4)
- 15) Mori teaches that the concentration of ozone in the water is preferably adjusted to a range of .05 to .3 mg/l. (Mori, claim 1).
- 16) Mori states that it is known in the art to use ultrafiltration and microfiltration membranes in small scale water purification processes because of their advantages over coagulation sedimentation processes including a high ability to remove impurities, germs and protozoas sufficiently, high reliability, etc. (Mori, col. 1, ll. 47-55).
- 17) Mori teaches that the presence of ozone in the raw water helps to decompose the organic substances attaching to or clogging the membrane so that a large filtration flux can be obtained. (Mori, col. 4, ll. 6-10).

- 18) Mori teaches that adding ozone to raw water is effective in removing color and foul odor and taste. (Mori, col. 4, ll. 15-17).
- 19) Mori teaches that water exiting the ozone-resistant membrane may be filtered through activated carbon and a reverse osmosis membrane. (Mori, col. 2, ll. 62-67).
- 20) Mori teaches that “[w]hen the activated carbon treatment is conducted, it is important to control the ozone concentration of the water filtered through the ozone-resistant membrane at a low level” to prevent the activated carbons from reacting with ozone. (Mori, col. 7, ll. 44-48).

ANALYSIS AND CONCLUSIONS

I. Would one of ordinary skill in the art have understood Appellant’s original Specification and claims as disclosing a water filtration apparatus in which water exiting the apparatus did not contain ozone?

The Examiner determined that there is no supporting disclosure in the original Specification or claims for the claim 49 recitation “wherein said disinfectant is absent of the purified water when said purified water exits said apparatus.” (Answer 3). Appellant maintains that the limitation “is supported and can be readily inferred” from page 12 of the Specification which states, *inter alia*, that the ultra-micro-filtration membrane lowers the concentration of the remaining ozone in the water. (Br. 14). Appellant asserts that one of ordinary skill in the art would understand that a reduction in ozone concentration would continue from this point on until the water exits the apparatus. (Br. 14). As pointed out by the Examiner, lowering the

concentration of ozone merely means that less ozone is present, not that it is absent from the water. (Answer 7). Appellant has not provided any evidence to show that one of ordinary skill in the art would have a different understanding of the referenced portion of the Specification.

Accordingly, we affirm the rejection of claims 49-62 under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement.

II. Has the Examiner identified a reasonable basis in the prior art for using Mori's membrane filter in the Gastman/Conway water treatment apparatus? If so, has Appellant provided sufficient evidence to overcome the Examiner's prima facie showing of obviousness?

The Examiner relied on Gastman and Conway for a teaching of the invention as claimed in independent claims 13, 36, and 49 with the exception of a filter comprising ozone/disinfectant resistant means.² The Examiner relied on Mori for a teaching of Appellant's claimed "filter which comprises ozone resistant means and which lowers the turbidity level and lowers said ozone in said water source" (claims 13 and 36) and claimed "filter which comprises disinfectant resistant means and which lowers the turbidity level and lowers said disinfectant in said water source" (claim 49). The Examiner found that it would have been obvious to one of ordinary skill in the art at the time of Appellant's invention to use Mori's ozone-resistant membrane filter in the Gastman/Conway water treatment apparatus to gain the numerous advantages noted in Mori. (Answer 5 (citing Mori, col. 2, ll. 30-55) and Answer 10).

² Appellant does not dispute the Examiner's interpretation of the claimed "ozone resistant means" under 35 U.S.C. § 112, sixth paragraph (*see* Answer 4-5).

Appellant argues that the Examiner failed to explain the desirability of combining Mori with Gastman and Conway. (Br. 18). Appellant also argues that Gastman teaches away from using Mori's ozone-resistant membrane filter. (Br. 20). Appellant bases these arguments on the contention that because Gastman uses a UV chamber 64 after the ozone treatment stage to destroy any remaining ozone, the use of Mori's ozone-resistant membrane filter in the Gastman/Conway apparatus would be superfluous. (Br. 19-20).

Although Gastman's UV chamber 64 neutralizes ozone in the water, Gastman teaches that water exiting the UV chamber is only "substantially free" of ozone (FF 9) which means that the water may still contain some amount of ozone. Gastman notes that any vessels and conduits that come into contact with ozonated water should be made of materials which are resistant to ozone oxidation. (FF 11 & 12). In Mori's process, an improvement in filtration flux through the ozone resistant membranes is observed with even a small concentration of ozone. (FF 15 & 17). Mori further teaches that a low level of ozone is preferred when an activated carbon treatment is used as a final purification step (FF 20). Thus, we are in agreement with the Examiner that one of ordinary skill in the art would not have been discouraged from using Mori's ozone resistant means in Gastman's filtration system. Rather, we find that the facts and reasons relied on by the Examiner establish a reasonable basis for concluding that one of ordinary skill in the art would have been motivated to use Mori's ozone resistant means in Gastman's filtration system (*see* Answer 5 and 10). *See KSR Int'l. v. Teleflex Inc.*, 127 S. Ct. 1727, 1732, 82 USPQ2d 1385, 1390 (2007) ("It is common sense that familiar items may have obvious uses beyond their primary purposes, and a person of ordinary skill often will be able to fit the teachings of multiple patents together like pieces of a

puzzle.”). *See also, In re Beattie*, 974 F.2d 1309, 1312, 24 USPQ2d 1040, 1042 (Fed. Cir. 1992) (“As long as some motivation or suggestion to combine the references is provided by the prior art taken as a whole, the law does not require that the references be combined for the reasons contemplated by the inventor.”).

Appellant additionally argues that claims 36 and 49 are patentable over the applied prior art because they recite features not present in Mori. (Br. 24 and 25). These arguments are not persuasive since the rejection is based on the combined teachings of the references. (*See Answer 13-14*).

Appellant’s Affidavit is likewise unpersuasive in overcoming the Examiner’s prima facie showing of obviousness because it focuses on Mori, and fails to address the facts and reasons relied on by the Examiner in rejecting the claims (*see Answer 13*). For example, the affiant (i.e., Appellant) maintains that the apparatus of Mori cannot be modified to use only ozone without undue experimentation. This argument does not address the Examiner’s contention that it would have been obvious to have used an ozone resistant membrane filter in the Gastman/Conway filtration system. The affiant also states that he disagrees with the Examiner’s conclusion that it would have been obvious to combine the components of the cited prior art in the manner claimed, but does not refute the reasons relied on by the Examiner to establish motivation to combine the reference teachings in the manner claimed.

Accordingly, we affirm the rejection of claims 13, 23-28, 31, 32, 36, 38-50, 52-62, 64, and 65 under 35 U.S.C. § 103(a) as unpatentable over Gastman in view of Conway and Mori for essentially those reasons set forth in the Examiner’s Answer. Because Appellant does not present any additional substantive arguments in response to the rejection of claims 37,

51, and 63 under 35 U.S.C. § 103(a) as unpatentable over Gastman in view of Conway and Mori and further in view of Mausgrover, we also affirm this ground of rejection.

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

AFFIRMED

sld/lr

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