

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte FABIO PELLIZZER and
CHARLES H. DENNISON

Appeal 2008-3993
Application 10/982,295
Technology Center 2800

Decided: November 25, 2008

Before MAHSHID D. SAADAT, ROBERT E. NAPPI, and KARL D. EASTHOM, *Administrative Patent Judges*.

EASTHOM, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

Appellants appeal under 35 U.S.C. § 134 from the Final Rejection of claims 1-20, the only claims pending (*see* App. Br. 5). We have jurisdiction under 35 U.S.C. § 6(b).

Appeal 2008-3993
Application 10/982,295

We affirm.

Appellants' invention relates to phase change memory cell comprising a trench formed in an insulating layer and having inclined sidewalls. A phase change material resides in the trench. (Abstract; Spec. 11: 3-18; Spec. 12: 1-18; Figs. 9, 11).

Claim 1 is illustrative of the invention and reads as follows:

1. A phase change memory comprising:

an insulating material;

a trench formed in said insulating material, said trench having inclined sidewalls; and

a phase change material in said trench.

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

Johnson US 6,791,102 B2 Sept. 14, 2004

Claims 1-8, 10-18, and 20 stand rejected under 35 U.S.C. § 102(e) as being anticipated by Johnson.

Claims 9 and 19 stand rejected under 35 U.S.C. § 103(a) as being obvious over Johnson.

ISSUE

Appellants' arguments regarding the anticipatory rejection of claims 1-8, 10-18, and 20 under Johnson are directed toward independent claim 1. (App. Br. 9). Therefore, we select claim 1 as representative of the group.

Appeal 2008-3993
Application 10/982,295

Appellants dispute (App. Br. 9) the Examiner's finding (Ans. 4) that Johnson's trench includes inclined sidewalls. Thus, the issue: Does Johnson disclose a trench having inclined sidewalls and containing a phase change material?

FINDINGS OF FACT (FF)

1. Johnson discloses a trench formed, *inter alia*, in insulating material 660, 620, and 740. (Johnson, col. 9, ll. 31-40, col. 10, ll. 16-19, col. 11, ll. 60-63, Fig. 21). The trench also may also include insulating protective layer 730 (col. 11, ll. 34-40, 60-63).
2. Phase change material 720 resides in the trench (Johnson, col. 10, ll. 53-60; Fig. 21).
3. Johnson's insulating spacer 740, attached to the insulating material 620, surrounds an opening 750 at the top of the trench containing phase change material 620. (Johnson, Fig. 21; col. 11, 24-25, 60-63). The spacer 740 has inclined side walls surrounding and defining the opening 750. (Johnson, Fig. 21).
4. Appellants admit that "items 740 have inclined sidewalls" (App. Br. 9).

PRINCIPLES OF LAW

Anticipation of a claim under § 102 can be found only if the prior art reference discloses every element of the claim. *See In re King*, 801 F.2d 1324, 1326 (Fed. Cir. 1986); *LindemannMaschinenfabrik GMBH v. American Hoist & Derrick Co.*, 730 F.2d 1452, 1457 (Fed. Cir. 1984).

ANALYSIS

The Examiner found (Ans. 4), Appellants agree, and we concur, that the spacer portion 740 has inclined sidewalls. (FF 3, 4). However, Appellants characterize the Examiner’s position as suggesting that the trench merely includes the opening 750. (App. Br. 9). As such, Appellants contend that since the phase change material 720 is not in the opening 750, it is not in the trench, as required by claim 1. (*Id.*)

Appellants’ characterization ignores the Examiner’s finding, with which we concur (FF 1-3), that the phase change material 720 is in the trench defined by, or circumscribed by, the total insulating structure which includes, *inter alia*, both the insulating material 620 and the insulating material of the spacer portion 740. (*See* Ans. 4). Thus, Appellants’ arguments do not demonstrate error in the Examiner’s position, with which we concur, that Johnson’s trench contains the phase change material 720 and includes the inclined sidewalls of spacer 740. (FF 1-4).

We also generally agree with the Examiner’s alternative finding that the vertical sidewalls of the trench in insulating material 620 constitute the claimed inclined sidewalls. (Ans. 4, 10). Appellants and the Examiner disagree over whether a vertical wall constitutes an inclined wall. (*Compare* App. Br. 9, Reply Br. 1-2, *with* Ans. 10). We find support for both positions,¹ but, we need not resolve this particular issue.

¹ For example, comparison of Appellants’ proffered definitions of “inclined” and “inclined plane” indicate that “inclined” generally does not require an oblique angle, but an inclined plane does (*see* App. Br.: Appendix). Further, Footnote continued on the next page.

That is, regardless of whether any vertical line can be considered to be inclined, Appellants' claim 1 lacks any frame of reference for "inclined." In other words, the claim fails to specify from which wall, or to which wall, the sidewalls incline. On the other hand, one of Appellants' proffered definitions for "inclined" includes another line or plane as a frame of reference.² Similarly, Appellants' disclosure reveals such a frame of reference. (*See Spec. 11:13-18; Fig. 9 – depicting angle "A" of inclined walls 32 with wafer 10 surface*). Accordingly, for the following two additional reasons, we find that Johnson meets the claim.

First, we find that Johnson's vertical sidewalls of the trench formed in insulating material 620 lean away from, or are inclined from, the sloping walls of the spacer 740. (Johnson, Fig. 21). Second, we find that Johnson contemplates orienting the disclosed memory device (e.g., camera, telephone, PDA) in any direction (col. 2, l. 67 to col. 3, l. 2; col. 12, ll. 15-27). Therefore, it follows from our second finding that even Johnson's vertical sidewalls in material 620 of said memory device necessarily become oriented at an inclination relative to another plane outside the device. Thus, in the absence of any claimed reference plane or angle, we generally agree with the Examiner that Johnson's vertical sidewalls constitute the claimed inclined sidewalls.

according to Appellants' definitions, "inclination" is determined simply as an angle between two lines, two planes, or between a line or plane and a true vertical or true horizontal line or plane. (*See App. Br.: Evidence Appendix – Merriam-Webster's Collegiate Dictionary (10th Ed.) (hereinafter "Dictionary") – see definition of "inclination"*). Hence, such an angle includes a vertical line of ninety degrees (i.e., an infinite slope).

² *See e.g.* the definition 2b of "inclined," to wit: "making an angle with a line or plane" (App. Br.: Evidence Appendix, Dictionary, emphasis added).

Appeal 2008-3993
Application 10/982,295

Consequently, for the reasons explained above, we agree with the Examiner that Johnson meets claim 1. Accordingly, we sustain the Examiner's rejection of claim 1, and of claims 2-8, 10-18, and 20, not separately argued. We also sustain the obviousness rejection of claims 9 and 19, not separately argued.

CONCLUSION

Johnson discloses a trench having inclined sidewalls and containing a phase change material.

DECISION

We affirm the Examiner's decision rejecting claims 1-20.

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).

AFFIRMED

gvw

TROP PRUNER & HU, PC
1616 S. VOSS ROAD, SUITE 750
HOUSTON, TX 77057-2631