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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte MICHAEL D. NEWMAN[1]

Appeal 2018-007909
Application 14/259,582
Technology Center 1700

Before BRADLEY R. GARRIS, ADRIENE LEPIANE HANLON, and MICHAEL P. COLAIANNI, *Administrative Patent Judges*.

HANLON, *Administrative Patent Judge*.

DECISION ON APPEAL

A. STATEMENT OF THE CASE

The Appellant filed an appeal under 35 U.S.C. § 134(a) from an Examiner's decision finally rejecting claims 1–6 under 35 U.S.C. § 103(a) as unpatentable over Lang et al.[2,3] We have jurisdiction under 35 U.S.C. § 6(b).

We AFFIRM.

[1] The real party in interest is said to be Linde Aktiengesellschaft. Appeal Brief dated February 26, 2018 ("Br."), at 3.
[2] US 5,170,631, issued December 15, 1992 ("Lang").
[3] The final rejection of claims 1–6 under 35 U.S.C. § 112, first paragraph, based on the enablement requirement, was withdrawn by the Examiner in the Examiner's Answer dated May 24, 2018 ("Ans."), at 4.

The claimed subject matter is directed to an apparatus for reducing the temperature (e.g., freezing) of a product, such as a food product. The apparatus comprises a chamber, a plurality of zones in the chamber, a heat transfer apparatus at each one of the plurality of zones, and a conveyor assembly for transferring a food product through the plurality of zones. The heat transfer apparatus may be a fan, a cryogenic spray nozzle, or combinations thereof.

The apparatus also comprises a controller and sensors that communicate with the controller. The controller stores data of physical characteristics and a heat transfer profile of a food product to adjust and control the heat transfer rate atmospheres for the product, whereby the heat transfer rate of the product decreases as the product is transferred through each one of the plurality of zones.

Independent claim 1 is reproduced below from the Claims Appendix to the Appeal Brief. The limitation at issue is italicized.

> 1. An apparatus for reducing the temperature of a product, comprising:
>
> a housing having a chamber therein, and an inlet and an outlet in communication with the chamber;
>
> a plurality of zones in the chamber between the inlet and the outlet, each one of the plurality of zones having a corresponding heat transfer rate atmosphere and said plurality of zones being arranged in descending order of heat transfer rate atmospheres from the inlet to the outlet;
>
> a heat transfer apparatus disposed in the chamber at each one of the plurality of zones, the heat transfer apparatus selected from at least one of a fan, a cryogenic spray nozzle, and combinations thereof;
>
> a conveyor assembly for transferring the product from the inlet through the plurality of zones to the outlet;
>
> *a controller* in communication with the chamber, the plurality of zones, the heat transfer apparatus, the conveyor assembly and the heat transfer rate atmospheres, *the controller having stored therein*

> *data of physical characteristics and a heat transfer profile of the product to adjust and control the heat transfer rate atmospheres for the product*, such that a heat transfer rate of the product will decrease as the product is transferred from the inlet through each one of the plurality of zones to the outlet; and
>
> a sensor disposed at each of the chamber, the plurality of zones, the heat transfer apparatus, the conveyor assembly and the heat transfer rate atmospheres, and communicating with the controller for transeiving signals therewith.

Br. 18–19.

B. DISCUSSION

Lang discloses an apparatus for freezing food products in a chamber using a combination of mechanical refrigeration and liquid cryogen cooling wherein a conveyor is utilized to transport food products from a first cryogenic freezing zone through a second mechanically refrigerated freezing zone. Lang, col. 3, ll. 33–43. The Examiner finds that Lang's apparatus comprises each of the elements recited in claim 1 with the exception of sensors disposed at the locations recited in claim 1, i.e., "disposed at each of the chamber, the plurality of zones, the heat transfer apparatus, the conveyor assembly and the heat transfer rate atmospheres." Final Act. 4.[4]

The Examiner finds Lang uses sensors within the chamber for adjusting processing conditions and conveyor speed. Final Act. 4. In particular, the Examiner finds Lang teaches controlling "thermocouples to sense food product temperature, in addition to teaching providing signals to the controller for supplying appropriate cryogen flow to the food products." Final Act. 4–5. Based on those findings, the Examiner concludes:

[4] Final Office Action dated August 7, 2017.

> [S]ince Lang teaches the desire to both sense and achieve a final product temperature, it would have been obvious to one of ordinary skill in the art . . . to increase the number of sensor[s] with respect to the same [claimed] components as taught by Lang and communicating with the controller for transeiving signals therewith from the components thus dictating the degree and rate of freezing as determined by product temperature within the specific areas.

Final Act. 5 (citing Lang, col. 8, ll. 20–26).

The Appellant argues that the Examiner's conclusion of obviousness does not provide "the necessary underlying reasoning why one of ordinary skill would be motivated to [increase the number of sensors]." Br. 15–16.

We disagree. As explained by the Examiner, Lang teaches "controlling the temperatures of the product and thermocouples to sense temperature within each zone, in addition to teaching providing signals to the controller for supplying appropriate cryogen flow to the food products and speed of the conveyor." Ans. 6. The Examiner finds that one of ordinary skill in the art would have been motivated to increase the number of sensors in Lang's apparatus, as claimed, to ensure that the food products are cooled to the desired temperature.[5] Ans. 6; *see also id.*

[5] As for the claimed positions of the sensors, claim 1 recites that a sensor is "disposed at each of the chamber, the plurality of zones, the heat transfer apparatus, the conveyor assembly and the heat transfer rate atmospheres." Br. 18–19. The Appellant discloses that the chamber contains several zones, wherein at least one heat transfer apparatus is disposed in each zone and each zone has a corresponding heat transfer rate atmosphere. Spec. ¶ 18. The conveyor assembly travels through the chamber and thus travels through each of the zones in the chamber. Spec. ¶ 20. The sole Figure in the instant Application identifies four sensors 50 each positioned in chamber 18 adjacent heat transfer apparatus 36 and above conveyor 24 in zones 1–4 and one sensor 50 positioned in chamber 18 above heat transfer apparatus 34 and conveyor 24 in zone 2. Thus, reading claim 1 in light of the Specification, it would appear that claim 1 does not require separate sensors in the chamber, in each zone, at each heat transfer apparatus, at the conveyor assembly, and in each heat transfer rate atmosphere. *See In re Icon*

(pointing out that the Appellant "has not provided reasons why Lang teaches away from additional sensors").

The Appellant also argues:

> [I]t is not only the "sensor disclosed at each of the chamber, the plurality of zones, the heat transfer apparatus, etc." as called for in claim 1, but rather, the co-action of the zones with respect to the controller which efficiently reduces the temperature of a product through a plurality of zones being arranged in descending order of heat transfer rate responsive to the controller having stored therein data of physical characteristics and a heat transfer profile of the product to adjust and control the heat transfer rate atmospheres for the product. Such subject matter is neither disclosed in nor alluded to by Lang.

Br. 16.

The Appellant's argument is not persuasive of reversible error. Claim 1 recites that the controller stores data "to adjust and control the heat transfer rate atmospheres for the product, such that a heat transfer rate of the product will decrease as the product is transferred from the inlet through each one of the plurality of zones to the outlet." Br. 18.

The Examiner finds Lang teaches a master control panel, corresponding to the claimed controller, in communication with the chamber. Ans. 5 (citing Lang, col. 8, ll. 8–10); *see also* Lang, col. 8, ll. 7–12 (disclosing that the master control panel includes an adjustable cryogen temperature control unit that responds to either one or both of two thermocouples disposed adjacent the entrance and exit openings for the first freezing zone).

Lang discloses that an advantage of the disclosed apparatus

Health and Fitness, Inc., 496 F.3d 1374, 1379 (Fed. Cir. 2007) (during examination, claims must be given "their broadest reasonable construction consistent with the specification").

> is the capacity to adjust or tailor the process to the particular food products being frozen in order to achieve the most favorable balance of cryogenic freezing and mechanical refrigeration freezing. Depending on the mass of the product, the thickness and the incoming temperature, there may be more or less cryogenic cooling required to cool the product quickly to at or near the 32° F. level.

Lang, col. 10, ll. 14–21.

The Examiner finds Lang discloses a first freezing zone cooled by liquid cryogen producing temperatures of –110°F or below and a second freezing zone cooled by mechanical refrigeration. Ans. 5. Lang discloses that "[i]t is possible with the combination freezer of the present invention to use only that amount of cryogen necessary to accomplish the *rapid initial chilling of the food product*, while relying on the less costly mechanical refrigeration to *complete the freezing of the product*." Lang, col. 10, ll. 22–27 (emphasis added). Based on that disclosure in Lang, the Examiner finds that the heat transfer rate of the product decreases as the product is transferred from the inlet to the outlet of the chamber as claimed. Ans. 3 (citing Lang, col. 10, ll. 18–26). The Appellant does not direct us to any evidence establishing otherwise.

In sum, a preponderance of the evidence of record supports the Examiner's conclusion of obviousness. The Appellant does not present arguments in support of the separate patentability of any of dependent claims 2–6. Therefore, the obviousness rejection of claims 1–6 is sustained.

C. DECISION

The Examiner's decision is affirmed.

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).

AFFIRMED