UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte BLAIR C. FUESSLEY and CHAD M. MARSH,
APPELLANTS

Appeal 2007-2504
Application 10/324,288[1]
Technology Center 2800

Decided: March 11, 2008

Before CAROL A. SPIEGEL, MARK NAGUMO, and
MAHSHID D. SAADAT, *Administrative Patent Judges*.

NAGUMO, *Administrative Patent Judge*.

DECISION ON APPEAL

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[1] Application 10/324,288 (the disclosure is cited as "Spec.") filed 19 December 2002, *Method and Apparatus for Tracking Individual Plants while Growing and/or After Harvest*. The real party in interest is listed as Pioneer Hi-Bred Int'l, Inc. (Appeal Brief filed 14 September 2004 ("App. Br."), at 1.)

A. Introduction

Blair C. Fuessley and Chad M. Marsh ("Fuessley") appeal under 35 U.S.C. § 134(a) from the final rejection of claims 1, 2, 4, 5, 9–13, 16–21, 23–88, 91, 93, 95, 97, 99, which are all of the claims pending in the application. We have jurisdiction under 35 U.S.C. § 6. We REVERSE.

The claimed subject matter relates to methods and apparatuses for conducting experiments on field crop plants involving tracking individual plants through growth and harvesting. Claim 1 is representative and reads:

> A method of enhancing an experiment relating to plant breeding or advancement or genetic modification for field crop plants, wherein a part of the experiment comprises growing field crop plants from seed of known parentage or genetic trait in a growing location in a field comprising:
>
> (a) at a planting time, planting a set of seed of known parentage or genetic trait in the growing location;
>
> (b) growing plants from the set of seed so that the plants from the seed emerge from the ground;
>
> *(c) during a growing time, physically attaching machine-readable identifying data on or with each of a plurality of the growing plants in the field, the data including information distinguishing each of the plurality of the growing plants from other plants; and maintaining a database including the identifying information correlated to each of the plurality of growing plants*;
>
> (d) during the growing time, deriving a trait or characteristic related to selected plants from the plurality of growing plants by analysis of each selected plant or a part thereof, the derived trait or characteristic comprising information indicative of a gene present in the selected plant, the information indicative of a gene present in the selected plant comprising information indicative of a gene that affects disease resistance, height,

protein content, oil profile, flavonoids, yield, maturity, herbicide resistance, or a transgenic trait;

(e) adding to the database information about the derived trait or characteristic and correlating it with the plant to which it relates;

(f) at harvest time, harvesting substantially all of the selected plants, or plant materials or seed of substantially all the selected plants, from the field, including those ultimately not selected for continued use in the experiment, in a manner that does not require a correlation between each of the harvested selected plants and its position in the growing location in the field, but with the machine-readable data physically attached to each plant;

(g) reading the machine-readable data attached to a harvested selected plant;

(h) associating the derived trait or characteristic in the database with the identifying data read from the machine-readable data for the harvested plant;

(i) deciding, after harvest, on a plant-by-plant basis, whether each individual harvested selected plant and its seed will or will not be selected for continued use relative to the experiment using said association.

(App. Br. Claims App'x at 42–43) (emphasis added).

The Examiner has maintained the rejection of claims 1, 2, 4, 5, 9–13, 16–21, 23–88, 91, 93, 95, 97, 99 under 35 U.S.C. § 103(a) in view of the combined teachings of Hunter[2], DeVito[3], and Matson[4].

[2] James L. Hunter, et al., *Automated High-Throughput Seed Sample Processing System and Method*, U.S. Patent 5,706,989 B2, issued 16 March 2004, based on 09/776,403, filed 2 February 2001.

B. Findings of Fact (FF)

Findings of fact throughout this Decision are supported by a preponderance of the evidence of record.

The 288 Specification

1. The claimed invention is said to maintain identification data with selected individual plants in plant breeding experiments even when the plants are harvested *en masse*. (Spec. at 1–3.)

2. According to the specification, ordinarily, plants in breeding or advancement studies are planted in plots.

3. It is said that records are typically kept for individual plants, "[b]ut a worker has to refer back to notes when looking for plants with desired traits or characteristics, and then physically go out to the plot, locate desired plants, harvest them, and bring them to the threshing site. This is cumbersome, time-consuming and subject to human error." (Spec. at 2:12-16.)

4. Such methods, as applied to a large number of individual plants, are said to be "difficult or impossible, given practical resource and economic constraints." (Spec. at 3:7–8.)

5. The specification teaches that by attaching a machine readable identification tag to each plant as it is growing, an identification record can be associated with each plant. (Spec. at 6:13–16.)

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[3] Peter DeVito and Duncan C.A. McLintock, Plant Tag Device and Method, GB 2,366,939 A, published 20 March 2002.

[4] Kevin W. Matson, *Method and Apparatus for Culling Directly on a Harvesting Apparatus*, U.S. Patent 5,987,384, issued 16 November 1999.

6. One embodiment of such a tag is a bar code. (Spec. at 8:23–24.)

7. The tag allows many plants to be "harvested" (defined as "pulled, cut down, or otherwise removed from the ground" (Spec. at 3:23–24) "*en masse*" (*id.* at 4:1) in the field plots, but identified by the machine-readable tag and sorted for further treatment (e.g., discarded or used in further studies) at a "threshing location" (*id.*).

Hunter

8. Hunter describes an apparatus and process for automated seed processing.

9. Hunter is concerned particularly with the "automatic processing of previously harvested seed samples used in plant breeding programs and applications." (Hunter at 1:9-12.)

10. Hunter describes the preliminary steps of a particular embodiment of its process in the following words:

> Ear corn samples from particular field plots are bagged. Bar codes are generated by known methods with identifying information about each sample. The identifying information is correlated to a data base format that can be used in maintaining an overall seed inventory and control system for a plant breeding program.

(Hunter at 5:58–63.)

11. According to Hunter, information can be stored in a local database **47** as well as in an enterprise wide database **48**, "including a shipping location, the year of the seeds, the season of the seeds, the location of the seed plots, a test plot identification number, seed experiment information, whether a

particular seed sample is genetically modified, and other user-defined information. . . ." (Hunter at 10:18-24.)

12. Hunter describes a "validation" step, in which, "when the harvest tag **18** is read by bar code reader **24**, identifying information on the bar code is immediately evaluated to ensure this bag of ear corn is authorized to be processed in system **10**. . . . If the ID (identification) does agree, system **10** is authorized to process that sample." (Hunter at 10:51–54.)

13. Hunter does not describe physically attaching a machine-readable tag to the growing plant.

14. Hunter does not describe harvesting plants having machine-readable tags attached to them.

DeVito

15. DeVito describes a system for tracking potted plants with "smart tags." (DeVito at 1.)

16. According to DeVito, a "data storage/retrieval device is preferably positioned in the soil of a plant pot. The data storage/retrieval device may be secured by being fixed to the plant itself or to the wall of the plant pot." (DeVito at 4, 3d paragraph.)

17. The tag is said to provide information about the physical characteristics of the plant and its history (DeVito at 5, 2d paragraph) or other information (*id*., paragraph bridging 9–10.)

Matson

18. Matson describes a method of selecting (culling) plants, e.g., soybeans, directly on a harvesting culling machine. (Matson at 1:6-11).

19. In one aspect, the method comprises (a) designating a plurality of plots to be harvested; (b) sequentially collecting test samples from the plots on a harvester and storing test data, e.g., per cent protein, per cent oil and yield, in a computer system on the harvester; (c) collecting current data on a current test sample on board the harvester; and, (d) selecting with the computer whether the discard or save the current test sample while on board the harvester based on the current data and the stored data. (I*d*. at 3:8-18 and 8:48-61).

20. The harvesting culling machine includes:

> a harvesting apparatus; a collector for receiving product from the harvesting apparatus; a measuring compartment for receiving product from the collector . . . ; and a computer system for 1) inputting parameters pertaining to a plurality of plots of product to be harvested, 2) storing test data pertaining to the product, 3) collecting current data relative to a current test sample, and 4) selecting whether to discard or to save the current test sample while on board the harvesting apparatus based on the current data and the stored data.

(Matson at 3:33-48).

C. Discussion

On appeal, the procedural burden is on the Appellant to demonstrate reversible error in the Examiner's rejections. Arguments not made in the principal brief on appeal are waived absent a showing of good cause why they could not have been made. 37 C.F.R. § 41.37(c)(vii).

The Examiner finds that Hunter describes "most of the limitations of the independent claims." (Answer ("Ans.") at 9.) According to the Examiner, the differences are that Hunter does not describe tagging individual plants or tracking specific genetic markers. (*Id.*) The Examiner relies on DeVito's description of attaching smart tags to plants to satisfy the first difference and on Matson to satisfy the second difference. The Examiner finds that Matson also teaches that soy beans are selected in the field based on visual inspection or some measure of yield. (*Id.* at 6.) The Examiner "considers" this method to be equivalent to the method of harvesting plants in the field in a manner that does not require a correlation between the individual plants and their location in the field. (*Id.*) The Examiner argues that one of ordinary skill in the art would have been motivated to tag individual plants before the processing taught by Hunter in order to track plants "with respect to location specific field plot data." (*Id.* at 5.)

Fuessley makes substantive arguments only with respect to the subject matter of claim 1. The remarks directed to other claims (App. Br. at 37–39) amount, at most, to a recitation of limitations recited by those claims and a denial that the limitations are taught by the references. Most of the claims are merely cited and urged to be allowable "for the reasons expressed in support of claim 1." (App. Br. at 38.) The regulations governing appeals state that "[a] statement which merely points out what a claim recites will not be considered an argument for separate patentability of the claim." 37 C.F.R. § 41.37(c)(vii). Accordingly, we need consider only claim 1 in any detail.

Fuessley raises a number of arguments against the Examiner's rejections, including that there is no teaching or motivation to combine the references because they are non-analogous art (App. Br. at 14–16 and at 23–27); that certain limitations (in particular, claim 1, parts (c), (f), and (i)) are not taught (App. Br. at 28–34); and that Appellants have discovered a useful solution to a problem not previously addressed in crop studies (App. Br. at 34–35).

Of all of Fuessley's arguments, the argument that the references fail to teach or suggest the *en masse* harvesting limitation of claim 1, part (f) is the strongest. Part (f) reads:

> at harvest time, harvesting substantially all of the selected plants, or plant materials or seed of substantially all the selected plants, from the field, including those ultimately not selected for continued use in the experiment, in a manner that does not require a correlation between each of the harvested selected plants and its position in the growing location in the field, but with the machine-readable data physically attached to each plant.

We are well aware of statements in the Supreme Court's recent decision in *KSR*, that tend to support a finding of obviousness in the present circumstances: "[t]he combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results." *KSR Int'l Co. v. Teleflex, Inc.*, 127 S.Ct. 1727, 1739 (2007), and, "[i]f a person of ordinary skill can implement a predictable variation, § 103 likely bars its patentability." *Id*. at 1740. The rub is in the adverb "likely." Each fact situation must be evaluated on its own merits.

We have no difficulty concluding that the limitations of step (c)—the tagging of individual plants—would have been obvious to one of ordinary

skill in the art, given the teachings of DeVito and Hunter. Fuessley's arguments to the contrary are not convincing because they impute, without evidence, what strikes us as an unrealistically low level of skill and an unrealistically narrow field of view on the part of the ordinary worker in the relevant arts. Moreover, Fuessley attempts to define the relevant arts too narrowly: experimental plant genetics, crop raising and harvesting, and large scale information management are all relevant to farmers and crop research scientists. Similarly, we have no trouble determining that the limitations of step (i)—deciding, on the basis of the characteristics of each plant, what to do with it—would have been obvious to the artisan. Step (i), after all, is the purpose of the prior art processes, and the purpose of the presently claimed improved process.

The weakness in the Examiner's attempted proof of obviousness is the failure to address the indiscriminate harvesting ("including those ultimately not selected for continued use") of step (f) separately. The Examiner, to the extent step (f) is considered, appears to treat it as an inevitable outcome of having tagged individual plants as they grow. Although step (f) may have been within the ability of the ordinary worker to implement, and the benefits would have been, on the present record, foreseeable, it is not the only possible or reasonable step that an ordinary worker might have taken to improve the sorting process described by Hunter. Hunter appears to describe a process in which an identifying tag that correlates information about the particular plot and plants is associated with each sack of corn at the time particular ears are harvested. The Examiner has not directed our attention to any description in Hunter suggesting a mass, indiscriminate harvesting of an entire field of corn comprising many different plots with

different varieties of corn plants. Nor did the Examiner expressly find such a teaching in Hunter. But the process described by Hunter might readily be improved by collecting the smart tags suggested by DeVito as the individual ears of corn are harvested.

What is missing from the record, as Fuessley argues, is evidence that would have suggested mass harvesting followed by individual sorting. Such evidence is necessary to avoid hindsight reconstruction of the claimed invention where, as here, more than one reasonable path of improvement is reasonably suggested by the prior art relied on as evidence of obviousness. Matson fails to provide such evidence. Matson describes a process comprising harvesting plants and, while still in the plots, analyzing their seed and automatically selecting, as the plants are harvested, which plots of plants to save and which to discard. Although the ultimate result (using only the seeds considered likely to be useful for further experimentation) may be equivalent to the ultimate result of the claimed process, the Examiner does not explain how and why the steps in the field described by Matson are equivalent to the mass harvesting followed by sorting recited in the claims.

E. Summary

In view of the record and the foregoing considerations, it is:

ORDERED that the rejection of claims 1, 2, 4, 5, 9–13, 16–21, 23–88, 91, 93, 95, 97, 99 under 35 U.S.C. § 103(a) in view of the combined teachings of Hunter, DeVito, and Matson is REVERSED;

FURTHER ORDERED that no time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a).

REVERSED

MAT

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