

The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.

Paper No. 20

UNITED STATES PATENT AND TRADEMARK OFFICE

**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Ex parte KATHERINE BECKER and
JOHN SCOTT

Appeal No. 2001-0692
Application No. 09/163,572

ON BRIEF

Before ADAMS, GRIMES, and GREEN, Administrative Patent Judges.

GRIMES, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal under 35 U.S.C. § 134 from the examiner's final rejection of claims 1-4, 8-10, 13-33, 36, and 37, all of the claims remaining.

Claims 1, 9, and 23 are representative and read as follows:

1. A method of simultaneously testing a plurality of compounds for activity in a screen which is a biological assay to determine the biological activity of the compounds comprising the steps of:
 - (a) placing a plurality of the compounds into at least two arrays, each having a plurality of test zones, with multiple compounds in each zone and at least one identical compound in at least two arrays;

set of “simple plates” which each contain test compounds arranged in a row-and-column grid. See page 5, lines 6-12. Thus, for example, a set of 10 simple plates might each contain a grid made up of 10 columns and 8 rows (80 test compounds per plate, or 800 test compounds in the set of 10 simple plates). See id.

The compounds on the set of simple plates are combined to produce two “master plates,” known as the X master plate and the Y master plate. See page 5, lines 12-22. To produce the X master plate, samples of each compound in a specific row of a specific plate are combined into a single, specific well in the X plate. Thus, for example, the first well of the first column of the X plate would contain a sample of each compound from columns 1 through 10 in the first row of plate 1, the second well in the first column of the X plate would contain a sample of each compound from the second row of plate 1, and so on. In this way, the contents of each simple plate are represented in a specific column of the X master plate.

The Y master plate is produced by a different method. The Y master plate is produced by taking a sample from the same location on each simple plate, and combining these ten samples into a single well in the same location on the Y plate. Thus, for example, samples of the compound found in the first column of the first row of each of the ten simple plates are combined in the well in the first column of the first row of the Y master plate. Thus, “[b]oth the ‘X Master plate’ and the ‘Y Master plate’ have 10 compounds in each well while each compound

appears once on each plate. However, no two compounds have the same pair of well locations.” Id., page 7.

After the X and Y master plates are produced, they are subjected to any of a variety of biological assays. See, e.g., pages 25-28. The pattern of positively reacting samples on the X and Y master plates identifies a specific compound or set of compounds as having positive activity in the screen.

Visually, when a hit is observed at a well in the Y plate, one can conclude that the hit resulted due to an active compound located at the same well location in one of the ten simple plates. A hit in the same row of the X plate can then be used to determine which of the ten simple plates contains the active compound. Specifically, the column number of the hit represents the simple plate which contains the active compound.

Specification, page 18.

The advantage of this, even given the probability of testing inactive compounds, is that the biological testers can go directly to quantitative screening with individual compounds. There is no need to create plates that contain the individual compounds. The same plate pairs can be sent to multiple screens, without need to create differently arranged plates for each screen.

Id., page 8.

Discussion

1. Indefiniteness

The examiner rejected all of the claims as indefinite. See the Examiner’s

Answer, page 7:

The preamble of claim 1 is directed to testing for activity but the claim lacks any such step. In view of claim 1 directed to activity, the dependent claims are not directed to activity where claims 8, 9, 13 are directed to ability, claims 14, 16 are directed to presence, claims 15, 17 are directed to absence, and so forth.

As amended, claim 1 now reads on determining the response activity which is not understood. Compounds may have a response to some reaction or an activity but not a response activity. Further, step 1(d) is directed to a positive response where this is not an activity and is not understood in context. The determination of whether a reaction takes place or does not is not presently claimed.

“The definiteness of the language employed must be analyzed—not in a vacuum, but always in light of the teachings of the prior art and of the particular application disclosure as it would be interpreted by one possessing the ordinary level of skill in the pertinent art.” In re Moore, 439 F.2d 1232, 1235, 169 USPQ 236, 238 (CCPA 1971). “The purpose of claims is not to explain the technology or how it works, but to state the legal boundaries of the patent grant. A claim is not ‘indefinite’ simply because it is hard to understand when viewed without benefit of the specification.” S3 Incorporated v. NVidia Corp., 259 F.3d 1364, 1369, 59 USPQ2d 1745, 1748 (Fed. Cir. 2001).

We do not find the claims to be indefinite. The claim language, when read in light of the specification, would be readily understood by those skilled in the art. See Hybritech, Inc. v. Monoclonal Antibodies, Inc., 802 F.2d 1367, 1385, 231 USPQ 81, 94-95 (Fed. Cir. 1987) (Claims comply with 35 U.S.C. § 112, second paragraph, if “the claims, read in light of the specification, reasonably apprise those skilled in the art and are as precise as the subject matter permits.”). The rejection under 35 U.S.C. § 112, first paragraph, is reversed.

2. Anticipation

The examiner rejected claims 1-4 and 9 under 35 U.S.C. § 102(b) as anticipated by Evans. The examiner noted that Evans “teaches on page 5032

Fig. 2 multiwell plate grids with a single clone common to both plates.”

Examiner’s Answer, page 4. See also page 8: “It is the examiner’s position that Evans teaches the presently claimed method of testing a plurality of compounds for activity. In the wells of Evans, a plurality of compounds is added and their activity is determined, all simultaneously. Note that the reaction of a probe being positive or negative is an activity determination.”

“It is well settled that a claim is anticipated if each and every limitation is found either expressly or inherently in a single prior art reference.” Celeritas Techs. Ltd. v. Rockwell Int’l Corp., 150 F.3d 1354, 1361, 47 USPQ2d 1516, 1522 (Fed. Cir. 1998). “[T]he description of a single embodiment of broadly described subject matter constitutes a description of the invention for anticipation purposes.” In re Lukach, 442 F.2d 967, 970, 169 USPQ 795, 797 (CCPA 1971).

We agree with the examiner that Evans anticipates instant claim 1. Claim 1 is directed to a screening method in which a plurality of test compounds are placed into at least two arrays, each of which has a plurality of test zones; multiple compounds are placed into each test zone, and at least one identical compound is placed into each of the two arrays. After the test compounds are placed into the arrays, the claimed method entails determining the location of each compound in the test zones of each array, determining the response activity of the compounds to the testing screen, and ascertaining which compounds had a positive response to the testing screen.

In the method disclosed by Evans, different DNA molecules (cosmids) are “organized as an ordered matrix.” Abstract; see also Figure 2. All of the cosmids

in a particular row or column of the array are then used to generate DNA probes corresponding to part of the DNA in each cosmid. See the legend to Figure 2. The pooled probes are then applied to all of the cosmids in the array and cosmids that hybridize to one of the mixed probes are identified. When the results of hybridization to a particular row and column are compared, cosmids that hybridize to both sets of mixed probes are identified as having DNA sequence that overlaps the DNA sequence of the cosmid clone that is common to both sets of probes. For example, in Evans' Figure 2, the mixed probes corresponded to the second row of the matrix (in the left-hand plate) and the fourth column of the matrix (in the right-hand plate). A single cosmid (marked with an arrow) hybridized to both sets of mixed probes. Thus, this cosmid was identified as containing a DNA sequence that overlapped the DNA sequence of the cosmid common to both probe sets, i.e., the cosmid located in the second row, fourth column.

This method meets all of the limitations of instant claim 1, including any limitations arising out of the claim's preamble. Claim 1 is directed to a method of "simultaneously testing a plurality of compounds for activity in a screen which is a biological assay to determine the biological activity of the compounds." Claim 9 makes clear that such activities include "the ability of compounds to hybridize to a library of genes." Evans discloses a method of simultaneously testing a plurality of nucleic acid probes for the ability to hybridize to a library of cloned DNA segments, which would be expected to include genes.

The manipulative steps recited in claim 1 are also met by Evans:

- (1) “placing a plurality of the compounds into at least two arrays”: Evans places mixed probes into two arrays (see Figure 2);
- (2) arrays having a plurality of test zones: each of the immobilized cosmids constitutes a separate test zone;
- (3) “multiple compounds in each zone”: Evans’ method includes applying mixed probes (i.e., a mixture of probes generated from each of approximately 20 different cosmids) to each test zone in a matrix;
- (4) “at least one identical compound in at least two arrays”: the experiment described in Evans’ Figure 2 involves applying the probe generated from the cosmid at row 2, column 4 to each of the two arrays; it is the hybridization of this probe to the cosmid marked with an arrow that identifies that cosmid as sharing sequence identity with the row 2, column 4 cosmid;
- (5) “determining the array location of each compound in each test zone”: in Evans’ technique the same set of compounds is applied to every test zone in a given array;
- (6) “determining the response activity of the compounds in the arrays to the testing screen”: Evans determines hybridization of the probes with the immobilized cosmid DNA; and
- (7) “ascertaining the compounds that had a positive response to the testing screen”: the hybridizing cosmids are identified.

Thus, we conclude that Evans identically discloses all of the limitations of claim 1. Claim 1 is therefore anticipated. Appellants have grouped claims 1-4 and 9 together on appeal. See the Appeal Brief, page 4. Therefore, claims 2-4 and 9 fall with claim 1.

Appellants argue that “[t]hroughout the specification, Applicant [sic] has indicated that the invention pertains to screening of large databases of compounds.” Appeal Brief, page 5. Evans, by contrast, “does not have and does not teach a testing of known compounds in a drug screening process. . . .

[In Evans], the libraries were not known nor [were] the RNA probes known at the time the testing was performed. Clearly this is a process that has no relationship to the screening of [a] large library of known compounds as called for in claim 1.” Appeal Brief, page 7.

This argument is not persuasive. Claim 1 is not limited to a process of screening a large library or database of known compounds. As discussed above, the claim language is broad enough to encompass the hybridization assay method disclosed by Evans. Since claim 1 reads on the method disclosed by Evans, and Evans is prior art, claim 1 is anticipated.

Appellants also argue that they submitted a declaration under 37 CFR § 1.132 , which provided evidence that “the invention in the present case is not disclosed in Evans.” Appeal Brief, page 6. The examiner, however, stated that the declaration was not considered because it was not timely submitted. Examiner’s Answer, page 8. Appellants “respectfully traversed” the examiner’s position, on the basis that the declaration had been entered during prosecution of the application that was the parent of the present application, and therefore should have been considered in this application as well. See the Reply Brief, page 4.

We decline to consider Appellants’ arguments based on the Brussolo declaration, however, because the declaration was submitted after the final rejection and the examiner refused to enter it. See the Examiner’s Answer, page 8. Appellants did not petition to have the examiner’s decision reversed, and this board has no authority to review such decisions. See Manual of Patent

Examining Procedure (MPEP) § 1002.02(c) (petitions relating to formal sufficiency and propriety of declarations under 37 CFR § 1.132 are decided by Technology Center Directors); § 1201 (“The line of demarcation between appealable matters for the Board of Patent Appeals and Interferences and petitionable matters for the Commissioner of Patents and Trademarks should be carefully observed.”). Therefore, the Brussolo declaration is not properly a part of the record on appeal and we have not considered it.

3. Obviousness

The examiner rejected claims 8, 10, 13-33, 36, and 37 as obvious in view of Evans and Pomponi. The examiner relied on Evans for the disclosures discussed above. The examiner cited Pomponi as teaching “an assay for CETP [cholesteryl ester transfer protein] in multiple 96-well microtiter plates to test for inhibition of various compounds where the compounds were placed in the wells with appropriate dilution, a testing screen was performed and the inhibition was determined.” Examiner’s Answer, page 6. The examiner concluded that

[i]t would have been obvious to one of ordinary skill in the art at the time the invention was made to screen compounds of any type in the method of Evans because Pomponi teaches different compounds than Evans determined in arrays and one would have a high expectation of success in employing known reaction formats to perform known reactions.

Id.

“In proceedings before the Patent and Trademark Office, the Examiner bears the burden of establishing a prima facie case of obviousness based upon the prior art.” In re Fritch, 972 F.2d 1260, 1265, 23 USPQ2d 1780, 1783 (Fed.

Cir. 1992). “[I]dentification in the prior art of each individual part claimed is insufficient to defeat patentability of the whole claimed invention. Rather, to establish obviousness based on a combination of the elements disclosed in the prior art, there must be some motivation, suggestion or teaching of the desirability of making the specific combination that was made by the applicant.” In re Kotzab, 217 F.3d 1365, 1369-70, 55 USPQ2d 1313, 1316 (Fed. Cir. 2000).

An adequate showing of motivation to combine requires “evidence that ‘a skilled artisan, confronted with the same problems as the inventor and with no knowledge of the claimed invention, would select the elements from the cited prior art references for combination in the manner claimed.’” Ecolochem, Inc. v. Southern Calif. Edison Co., 227 F.3d 1361, 1375, 56 USPQ2d 1065, 1075 (Fed. Cir. 2000). “Combining prior art references without evidence of such a suggestion, teaching, or motivation simply takes the inventor’s disclosure as a blueprint for piecing together the prior art to defeat patentability—the essence of hindsight.” In re Dembiczak, 175 F.3d 994, 999, 50 USPQ2d 1614, 1617 (Fed. Cir. 1999).

In this case, we agree with Appellants that the examiner has not shown that those skilled in the art would have been motivated to combine the teachings of the cited references. The assay disclosed by Evans involves hybridization of mixed probes with immobilized cosmid DNA to determine which cosmids share overlapping sequences. See page 5030 (abstract). The assay disclosed by Pomponi involved inhibition of the transfer of labeled cholesteryl ester from high density lipoproteins to low density lipoproteins to identify compounds of potential

use in treating atherosclerosis. See column 8, lines 35-50 and column 3, lines 43-52.

Other than the use of 96-well microtiter plates, the assays appear to have nothing in common. The examiner has provided no evidence or scientific reasoning to show “that ‘a skilled artisan, confronted with the same problems as the inventor and with no knowledge of the claimed invention, would select the elements from the cited prior art references for combination in the manner claimed.’” Ecolochem, 227 F.3d at 1375, 56 USPQ2d at 1075.

Since the examiner has not shown that the cited references would have suggested the instant claims to a person of ordinary skill in the art, the rejection under 35 U.S.C. § 103 is reversed.

Other Issues

The examiner rejected claims 14-17, 32, and 33 only for obviousness over Evans and Pomponi. For the reasons discussed above, the examiner’s rejection must be reversed. We note, however, that claims 14-17 are directed to the assay of claim 1, wherein the activity being assayed for is the presence or absence of a gene associated with a malady or with a biological response. In addition, claims 32 and 33 are directed to the assay of claim 1, where the number of compounds in each test zone is 5-20 or 8-12, respectively.

We have concluded, supra, that Evans discloses an assay meeting the limitations of claim 1. Since claims 14-17 are directed to assays to determine the presence or absence of specific DNAs, and since claims 32 and 33 add only the requirement of a specified number of compounds (e.g., probes), it may well be

that the teachings of Evans alone would have suggested these claims to a person of ordinary skill in the art. Upon return of this case, the examiner should review the claims individually and consider whether they would have been obvious to a person of ordinary skill in the art based on the prior art, including Evans.

Summary

The meaning of the claims is sufficiently clear when they are read in light of the specification. We therefore reverse the rejection for indefiniteness. The method defined by claim 1 reads on the assay method disclosed by Evans, and we therefore affirm the rejection of claim 1 for anticipation. Claims 2-4 and 9 fall with claim 1. However, we reverse the rejection for obviousness, because the prior art would not have led those skilled in the art to combine the teachings of the cited references. Therefore, claims 8, 10, 13-33, 36, and 37 are not subject to any outstanding rejections.

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

AFFIRMED IN PART

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Administrative Patent Judge)	
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