

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte MITCHELL A. FRIEDMAN

Appeal 2008-3139
Application 10/983,768
Technology Center 1700

Decided: June 30, 2008

Before CHARLES F. WARREN, PETER F. KRATZ, and
ROMULO H. DELMENDO, *Administrative Patent Judges*.

DELMENDO, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

Appellant appeals under 35 U.S.C. § 134 from a final rejection of claims 1-9 (Appeal Brief filed May 29, 2007, hereinafter “Br.,” 2). We have jurisdiction under 35 U.S.C. § 6(b).

We AFFIRM.

Appellant states that the invention “relates generally to mixing of fluid samples using shakers for microplates, small diameter test tubes, and like-configured fluid containers....” (Specification, hereinafter “Spec.,” 2, ll. 11-12).

Claims 1, 4, and 8 on appeal read as follows:

1. A method for mixing a fluid sample, comprising the steps of:

(a) providing a multidirectional shaker comprising a base;

a first electromagnetic drive unit attached to said base and having a first drive member aligned along a first axis, said first drive member operatively engaging a first support platform so as to move said first support platform in a first substantially horizontal direction;

at least one first spring member between said base and said first support platform positioned to move said first support platform in a second direction opposite said first direction;

a second electromagnetic drive unit having a second drive member aligned along a second axis at a right angle to said first axis, said second drive member operatively engaging a second support platform so as to move said second support platform in a third direction;

at least one second spring member between said first support platform and said second support platform positioned to move said second support platform in a fourth direction opposite said third direction;

(b) positioning a fluid sample on said second support platform;

(c) supplying a drive signal at a fixed drive signal frequency approximately equal to a natural frequency of said shaker to said first and second electromagnetic drive units to cause said first and second electromagnetic drive units to move said first and second support platforms in said first and third directions;

(d) terminating said drive signal to cause said at least one first spring member and said at least one second spring member to move said first and second support platforms in said second and fourth directions; and

(e) repeating steps c and d to mix said fluid sample.

4. The method of claim 1, wherein said first drive axis of said first electromagnetic drive unit is situated horizontally, and said second drive axis of said electromagnetic drive unit is situated at an angle to a horizontal plane extending through said first drive axis.

8. The method of claim 1, further comprising the steps of:

(f) terminating step (e);

(g) restarting step (e); and

(h) repeating steps (f) and (g) multiple times each second.

The prior art references relied upon by the Examiner in rejecting the claims on appeal are:

Schmidt	5,427,451	Jun. 27, 1995
Neuhaus	2,919,215	Dec. 29, 1959

The Examiner rejected claims 1-9 under 35 U.S.C. § 103(a) as unpatentable over the combined teachings of Schmidt and Neuhaus (Examiner's Answer mailed Aug. 22, 2007, hereinafter "Ans.," 3-8).

ISSUE

Has Appellant demonstrated reversible error in the Examiner's determination that the subject matter of appealed claims 1-9 would have been obvious to a person having ordinary skill in the art in view of the applied prior art references within the meaning of 35 U.S.C. § 103(a)?

FINDINGS OF FACT

1. Schmidt describes “a mixer which can operate with minimal damage to biological material and . . . which can impart a multidimensional oscillation to the object carrier or vessel...” (col. 1, ll. 31-37).
2. Specifically, Schmidt describes a mixer for multidimensional oscillation of an object comprising: a first generally horizontal frame movable in a Y-axis direction and carrying the object; first spring means including at least one spring deflectable in the Y-axis direction for supporting the first frame for oscillation in the Y-axis direction; a second generally horizontal frame movable in a X-axis direction supporting the first spring means and the first frame thereon; second spring means including at least one spring deflectable in the X-axis direction for supporting the second frame for oscillation in the X-axis direction; a base plate supporting the second spring means; and respective oscillating drives for the frames, each including a permanent magnet and a drive coil juxtaposed with the respective permanent magnet and operatively connected to the frames for oscillatingly driving the first frame in the Y-axis direction and the second frame in the X-axis direction (col. 1, l. 67 – col. 2, l. 19; Figure 1; col. 3, l. 48 – col. 4, l. 64).
3. Schmidt teaches (col. 2, ll. 55-65):

Precise setting of the resonance of the apparatus by changing of the spring constants ensures for different movable masses of the medium in the object carrier, operation within an

optimum range according to a feature of the invention, a device for the monodimensional adjustment of the spring constant of at least one X spring engaging the X frame or the Y frame and the base plate, a device is provided to alter the spring constants whereby the spring rod or a part connected therewith is clamped on the spring plate and is engaged in a journal bearing of the frame.

4. Schmidt further states that “[t]he oscillating drives should be adjustable independently from one another as to frequency, amplitude and phase and the control or regulation can use feedback control if desired so that the direction-dependent oscillation in each case is optimal” (col. 3, ll. 4-8).
5. Schmidt also teaches that “viscosity changes can be utilized to shift the resonance point or to detect shift in the resonance point,” which “can be utilized to automatically allow the drives to operate at a new resonance point for optimum mixing or can allow change in the resonance point to act as a measurement of the viscosity” (col. 3, ll. 17-25).
6. Relying on a dictionary, the Examiner found that “‘resonance’ means ‘a vibration of large amplitude in a mechanical or electrical system caused by a relatively small periodic stimulus of the same or nearly the same period as the natural vibration period of the system’ or ‘the state of adjustment that produces resonance in a mechanical or electrical system’” (Ans. 4).
7. Appellant did not direct us to any evidence demonstrating that the Examiner’s finding with respect to the definition of “resonance” is incorrect.

8. The Examiner found that Schmidt describes every limitation of appealed claim 1 except it “does not disclose repeatedly supplying and terminating the drive signal as claimed” (Ans. 4).
9. Appellant did not dispute the Examiner’s finding with respect to Schmidt’s disclosure of every limitation recited in steps (a) and (b) of appealed claim 1 (Br. 6).
10. Neuhaus discloses an “apparatus for vibrating liquids, in which vibrations are transmitted to the liquid through the whole or a part of the walls themselves of the vessel containing the liquid” (col. 1, ll. 15-18).
11. Neuhaus teaches (col. 1, ll. 43-52):

In accordance with the present invention, the system formed by the receptacle and the liquid on one hand, and the emitters of the said fields on the other, are preferably given such characteristics that their frequencies are in resonance.

Thus, one can tune either one of the fundamental frequencies of the vibratory system formed by the vessel and the liquid to the frequency of the fields (for example, by varying the level of the liquid), or the frequency of the fields to one of the fundamental frequencies of the vibratory system formed by the vessel and the liquid.

12. Additionally, Neuhaus states (col. 1, ll. 64-70):

[I]t is possible in particular to rectify the alternating current by suppressing one alternation and the frequency of the exciting force is then brought back to 50. Thus, the dimensions of the vessel in resonance with that frequency, can be materially increased and furthermore the noise of the apparatus is more acceptable to the human ear.

13. According to Neuhaus, “applications of the [Neuhaus] invention are very numerous” including, but not limited to, “foodstuffs,” which the Examiner found to be a biological material (col. 2, ll. 14-15; Ans. 6).
14. In this appeal, Appellant did not rely on any secondary considerations of nonobviousness (e.g., unexpected results).

PRINCIPLES OF LAW

“Section 103 forbids issuance of a patent when ‘the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.’” *KSR Int’l Co. v. Teleflex, Inc.*, 127 S. Ct. 1727, 1734 (2007).

KSR reaffirms the analytical framework set out in *Graham v. John Deere Co. of Kan. City*, 383 U.S. 1 (1966), which states that an objective obviousness analysis includes: (1) determining the scope and content of the prior art; (2) ascertaining the differences between the prior art and the claims at issue; and (3) resolving the level of ordinary skill in the pertinent art. *KSR*, 127 S. Ct. at 1734. Secondary considerations such as commercial success, long felt but unsolved needs, or failure of others “‘might be utilized to give light to the circumstances surrounding the origin of the subject matter sought to be patented.’” *Id.* (quoting *Graham*, 383 U.S. at 17-18).

The two separate tests for determining whether a prior art reference is analogous is as follows: (1) whether the art is from the same field of endeavor, regardless of the problem addressed; and (2) if the reference is not

within the inventor's endeavor, whether the reference is reasonably pertinent to the particular problem with which the inventor is involved. *In re Bigio*, 381 F.3d 1320, 1325 (Fed. Cir. 2004).

“When a work is available in one field of endeavor, design incentives and other market forces can prompt variations of it, either in the same field or a different one.” *KSR*, 127 S. Ct. at 1740. According to *KSR*, “[i]f a person of ordinary skill can implement a predictable variation, § 103 likely bars its patentability.” *Id.* “For the same reason, if a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill.” *Id.* Furthermore, “familiar items may have obvious uses beyond their primary purposes.” *In re Icon Health and Fitness, Inc.*, 496 F.3d 1374, 1380 (Fed. Cir. 2007) (quoting *KSR*, 127 S. Ct. at 1742).

ANALYSIS

Appellant submits reasonably specific arguments for claims 1, 4, and 8 (Br. 5-11). Accordingly, we address these claims separately. Claims 1, 3, 5-7, and 9, however, have not been separately argued, so they stand or fall with claim 1. 37 C.F.R. § 41.37(c)(1)(vii).

It is undisputed that Schmidt describes every limitation of steps (a) and (b) of appealed claim 1 (Facts 1-5 and 9). While Schmidt teaches the use of multiple oscillating magnetic drives (Fact 2), the Examiner candidly acknowledged that Schmidt “does not disclose repeatedly supplying and terminating the drive signal as” specified in steps (c) through (e) of appealed claim 1 (Fact 8).

To resolve the difference between Schmidt and the subject matter of appealed claim 1, the Examiner relied on the teachings of Neuhaus (Ans. 4). The teachings of Neuhaus are broadly applicable to the use of apparatuses designed to vibrate liquids “through the whole or a part of the walls themselves of the vessel containing the liquid” and are even applicable to “foodstuffs,” which the Examiner found to be a biological material (Facts 10 and 13). According to Neuhaus, the frequencies of the emitters and the system including the fluid are in “resonance” (Fact 11). Neuhaus further teaches rectifying the alternating current (and thus supplying and terminating the signal repeatedly as herein claimed) to control noise (Fact 12; Ans. 6).

Given the collective teachings of the prior art, we agree with the Examiner that a person having ordinary skill in the art would have been led to rectify the alternating current (to repeatedly supply and terminate) the signals to Schmidt’s oscillating drives with the reasonable expectation of controlling noise as suggested by Neuhaus, thus arriving at a method encompassed by appealed claim 1. Thus, the Examiner has established a *prima facie* case of obviousness.

In rebuttal, Appellant urges that Neuhaus cannot be combined with Schmidt because Neuhaus constitutes non-analogous art (Br. 6-7). Appellant’s argument fails under either prong of the nonanalogous art test. *In re Bigio*, 381 F.3d at 1325.

Neuhaus explicitly states that its disclosure relates to vibrating liquids using a magnetic field generated by alternating current (Facts 10 and 12). As evident from appealed claim 1 itself, Appellant’s invention is also directed to “shakers” (i.e., vibrators or oscillators) using a magnetic field powered by alternating current. Under these circumstances, the Examiner is

correct in holding that Neuhaus and Appellant's invention are from the same field of endeavor (Ans. 6). Even assuming that they are not, Neuhaus is still reasonably pertinent to the particular problem (vibration of liquids using a magnetic field) addressed by Appellant.

Moreover, “[w]hen a work is available in one field of endeavor, design incentives and other market forces can prompt variations of it, either in the same field or a different one.” *KSR*, 127 S. Ct. at 1740. Thus, “familiar items may have obvious uses beyond their primary purposes.” *In re Icon Health and Fitness, Inc.*, 496 F.3d at 1380 (quoting *KSR*, 127 S. Ct. at 1742). Applying these principles, we detect no problem in the Examiner's combination of Neuhaus with Schmidt because a person having ordinary skill in the art would have implemented a predictable variation of Neuhaus's solution in Schmidt's method, thus controlling noise. *KSR*, 127 S. Ct. at 1740.

We are unpersuaded by Appellant's contention that “Neuhaus describes a large tank having sheet metal walls (of about .5-1mm thickness) to serve as a washing machine” (Br. 6). Neuhaus's suggestion is by no means limited to washing machines (Fact 13). As succinctly stated by the Examiner (Ans. 6-7), “[t]he reasoning of Neuhaus . . . that one can change an acoustic frequency from that which would result from a standard alternating current frequency, to a frequency that ‘is more acceptable to the human ear’ by rectifying the current, is generally applicable to vibrational systems driven by electromagnets powered by alternating current.” While Appellant argues that “[n]othing in the specification of Schmidt indicates that such loud noises...would occur in the Schmidt mixer” (Br. 7), Appellant

has failed to identify any evidence that Schmidt's mixer is in fact noise-free in operation.

Appellant alleges that “[s]hould one apply rectified current as the drive signal, the precise control provided by the complex feedback loop would be lost” in Schmidt (Br. 8). Again, we are unpersuaded. Even if we accepted Appellant's speculation as fact, Schmidt does not *require* a complex control system (Fact 4).

Appellant argues that the claimed invention provides “highly effective mixing” (Br. 9). But Appellant has not demonstrated this with any evidence (Fact 14). Accordingly, this argument fails.

Appellant also contends that “Neuhaus clearly distinguishes from Appellant's claim 1, which requires a drive signal supplied at a fixed drive signal frequency which matches the natural frequency of the shaker” (Br. 10). This contention is without merit for the reasons given by the Examiner (Ans. 4; Facts 6 and 7).

With respect to claim 4, Appellant alleges that “none of the prior art teach or suggest” the limitations recited therein (Br. 11). The Examiner responds that Schmidt does in fact disclose the limitations in question (Ans. 8). Because Appellant did not explain why the Examiner erred, we uphold the rejection of claim 4 as well.

With respect to claim 8, Appellant asserts that “the examiner has not set forth any position regarding whether, how, or why a person of ordinary skill in the relevant art would modify Schmidt in light of such disclosure of Neuhaus...” (Br. 10-11). The Examiner, however, did provide an explanation (Ans. 7). Because Appellant did not explain why the Examiner erred, we cannot reverse.

CONCLUSION

On this record, we determine that Appellant has failed to demonstrate reversible error in the Examiner's determination that the subject matter of appealed claims 1-9 would have been obvious to a person having ordinary skill in the art in view of the applied prior art references within the meaning of 35 U.S.C. § 103(a).

DECISION

The Examiner's decision to reject appealed claims 1-9 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)(iv).

AFFIRMED

tf/lb

WHITEFORD, TAYLOR & PRESTON, LLP
ATTN: GREGORY M. STONE
SEVEN SAINT PAUL STREET
BALTIMORE, MD 21202-1626