UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte SHAWN P. KEENEY, JOSEPH KOSICH,
LUY B. NGUYEN, JOHN YERGER,
and ERIK JOHNSON

Appeal 2007-3204
Application 10/650,464[1]
Technology Center 2600

Decided: May 23, 2008

Before ANITA PELLMAN GROSS, SCOTT R. BOALICK,
and MARC S. HOFF, *Administrative Patent Judges*.

HOFF, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF CASE

Appellants appeal under 35 U.S.C. § 134 from a Final Rejection of claims 1-16. We have jurisdiction under 35 U.S.C. § 6(b).

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[1] Application filed August 28, 2003. The real party in interest is Cooper Wheelock.

We affirm-in-part.

Appellants' invention relates to a strobe alarm and/or horn alarm unit that is controlled by an application specific integrated circuit (ASIC) (Spec. 1).

Claim 1 is exemplary:

1. An alarm unit, comprising:

a flash circuit having a flashtube for generating a flash; and

an application specific integrated circuit (ASIC) coupled to said flash circuit, for triggering said flash.

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

Preston	U.S. 4,578,586	Mar. 25, 1986
Kataoka	U.S. 4,625,151	Nov. 25, 1986
Bechtel	U.S. 5,896,092	Apr. 20, 1999
Markwell	U.S. 6,078,269	Jun. 20, 2000
Hata	U.S. 6,091,898	Jul. 18, 2000

Claims 1, 4, 5, 7-9, and 11-16 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Bechtel in view of Markwell.

Claims 2 and 3 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Bechtel in view of Markwell and Preston.

Claim 6 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Bechtel in view of Markwell and Kataoka.

Claim 10 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Bechtel in view of Markwell and Hata.

Appellants contend, *inter alia*, that the Examiner failed to provide a prima facie case of obviousness, because the ASIC taught in Markwell

drives an LED and not a flashtube, and that because Bechtel teaches a flashtube rather than a battery-powered detector using an LED, Bechtel teaches away from Markwell.

Rather than repeat the arguments of Appellants or the Examiner, we make reference to the Brief and the Answer for their respective details.

ISSUE

The principal issue in the appeal before us is whether the Examiner erred in holding that it would have been obvious to modify Bechtel to use an ASIC to control a strobe and/or horn, as taught by Markwell.

FINDINGS OF FACT

The following Findings of Fact (FF) are shown by a preponderance of the evidence.

The Invention

1. According to Appellants, they have invented an alarm unit comprising a strobe unit and/or a horn unit controlled by an application specific integrated circuit (ASIC) to provide audible and/or visual alarm notification (Spec. 1).

2. Appellants' selection of a 60µs (16 kHz) charge cycle "results in the benefits of a strobe that is quieter (16 kHz is not typically audible), and a boost inductor has a lower inductance (and is therefore smaller and cheaper)" (Spec. 24).

3. Appellants vary the horn tone of the audio warning signal between a plurality of frequencies (Spec. 18-19).

Bechtel

4. Bechtel teaches an alarm system with a reflector and lens system which projects as much of the available light as possible into a required profile, with a minimum of wasted light (col. 1, ll. 52-57).

5. Bechtel teaches a flash circuit having a flashtube for generating a flash, and an integrated circuit U1 coupled to the flash circuit for triggering said flash (Fig. 7; col. 11, ll. 19-50; col. 12, l. 58 to col. 13, l. 12).

6. Bechtel teaches a current limiting circuit coupled to integrated circuit U1, constantly sensing and limiting an input current level (Fig. 7; col. 12, ll. 15-20, 57-67).

7. Bechtel teaches a pizzo horn for generating an audio warning signal (col. 15, ll. 59-63).

8. Bechtel teaches a synchronization detection circuit (col. 13, ll. 1-13).

9. Bechtel teaches an integrated circuit with a transistor drive capability of 7.6 volts (col. 13, ll. 5-19).

Markwell

10. Markwell teaches battery-powered, RF-interconnected, wireless sensors for detecting and alerting to emergency conditions such as smoke, fire, gas, intrusion, and the like (col. 1, ll. 6-10).

11. Markwell teaches an ASIC for triggering/controlling the flashing pattern alarm (Figs. 1, 3; col. 4, ll. 10-33).

Preston

12. Preston teaches continuously monitoring an atmosphere for the presence of predetermined chemical agents and producing an alarm signal

when a detected concentration of an agent exceeds a predetermined concentration level (col. 2, ll. 40-56).

13. Preston teaches a rotary switch for setting the amplitude/intensity of an alarm horn and light (col. 5, ll. 36-38).

Kataoka

14. Kataoka teaches a flash device having a backup capacitor voltage supply (col. 1, ll. 50-62).

15. Kataoka teaches a boost DC-to-DC converter (col. 2, ll. 20-25).

Hata

16. Hata teaches a lens-fitted photo film unit in which information of various kinds is written to a built-in memory IC without errors (col. 1, l. 66 – col. 2, l. 2).

17. Hata teaches a voltage doubler circuit (Fig. 4, 85) that boosts a battery voltage to the drive voltage VDD to be supplied to EEPROM 21 (col. 14, ll. 43-48 and col. 15, ll. 10-15).

Dictionary definition of "select"

18. "Select" is defined as "to choose in preference to another or others; pick out." select. (n.d.). *Dictionary.com Unabridged (v 1.1)*. Retrieved May 06, 2008, from Dictionary.com website: http://dictionary.reference.com/browse/select

PRINCIPLES OF LAW

In rejecting claims under 35 U.S.C. § 103, the Examiner bears the initial burden of establishing a prima facie case of obviousness. *In re Piasecki*, 745 F.2d 1468, 1472 (Fed. Cir. 1984). The Examiner can satisfy

this burden by showing some "articulated reasoning with some rational underpinning to support the legal conclusion of obviousness." *KSR Int'l. v. Teleflex Inc.*, 127 S. Ct. 1727, 1741 (2007) (*citing In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006)). Only if this initial burden is met does the burden of coming forward with evidence or argument shift to the Appellants. *Piasecki*, 745 F.2d at 1472. Thus, the Examiner must not only assure that the requisite findings are made, based on evidence of record, but must also explain the reasoning by which the findings are deemed to support the Examiner's conclusion.

"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. at 1734. The question of obviousness is resolved on the basis of underlying factual determinations including (1) the scope and content of the prior art, (2) any differences between the claimed subject matter and the prior art, (3) the level of skill in the art, and (4) where in evidence, so-called secondary considerations. *Graham v. John Deere Co.*, 383 U.S. 1, 17-18 (1966). *See also KSR*, 127 S. Ct. at 1734 ("While the sequence of these questions might be reordered in any particular case, the [*Graham*] factors continue to define the inquiry that controls.")

In *KSR*, the Supreme Court emphasized "the need for caution in granting a patent based on the combination of elements found in the prior art," *id.* at 1739, and discussed circumstances in which a patent might be

determined to be obvious. In particular, the Supreme Court emphasized that "the principles laid down in *Graham* reaffirmed the 'functional approach' of *Hotchkiss*, 11 How. 248." *KSR*, 127 S. Ct. at 1739 (citing *Graham v. John Deere Co.*, 383 U.S. at 12 (emphasis added)), and reaffirmed principles based on its precedent that "[t]he combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results." *Id.* The Court explained:

> When a work is available in one form of endeavor, design incentives and other market forces can prompt variations of it, either in the same field or a different one. If a person of ordinary skill can implement a predictable variation, § 103 likely bars its patentability. 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. at 1740. The operative question in this "functional approach" is thus "whether the improvement is more than the predictable use of prior art elements according to their established functions." *Id.*

The determination of obviousness must consider, *inter alia*, whether a person of ordinary skill in the art would have been motivated to combine the prior art to achieve the claimed invention and whether there would have been a reasonable expectation of success in doing so. *Brown & Williamson Tobacco Corp. v. Philip Morris Inc.*, 229 F.3d 1120, 1124 (Fed. Cir. 2000); M*edichem, S.A. v. Rolabo, S.L.*, 437 F.3d 1157, 1164 (Fed. Cir. 2006). Where the teachings of two or more prior art references conflict, the Examiner must weigh the power of each reference to suggest solutions to

one of ordinary skill in the art, considering "the degree to which one reference might accurately discredit another." *In re Young*, 927 F.2d 588, 591 (Fed. Cir. 1991). If the proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification. *In re Gordon*, 733 F.2d 900, 902 (Fed. Cir. 1984). Further, our reviewing court has held that "[a] reference may be said to teach away when a person of ordinary skill, upon reading the reference, would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path that was taken by the applicant." *In re Gurley*, 27 F.3d 551, 553 (Fed. Cir. 1994); *Para-Ordnance Mfg., Inc. v. SGS Importers Int'l, Inc.*, 73 F.3d 1085, 1090 (Fed. Cir. 1995).

During *ex parte* prosecution, claims must be interpreted as broadly as their terms reasonably allow since Applicants have the power during the administrative process to amend the claims to avoid the prior art. *In re Zletz*, 893 F.2d 319, 322 (Fed. Cir. 1989).

"One cannot show non-obviousness by attacking references individually where . . . the rejections are based on combinations of references." *In re Keller*, 642 F.2d 413, 426 (CCPA 1981). The test of obviousness is what the "combined teachings . . . would have suggested to those of ordinary skill in the art." *Id*. at 425.

ANALYSIS

Claim 1

Appellants argue that because Bechtel fails to teach, show or suggest an alarm unit that utilizes an ASIC (Br. 5), and Markwell's ASIC drives an LED and not a flashtube (Br. 6), there is no motivation to combine the references. Appellants further argue that Bechtel teaches away from Markwell because the drive circuit for a flashtube is completely different from the trigger circuit for an LED (*Id.*).

Appellants' first argument amounts to an attack on the references individually, which is not persuasive to overcome a rejection based on a combination of references. *See In re Keller*, *supra*. We agree with the Examiner's position that the combined teachings of Bechtel and Markwell (FF 5, 11) fairly suggest modifying Bechtel to include an ASIC as taught by Markwell, rather than the off-the-shelf integrated circuit chosen by Bechtel (Ans. 3-4). We further observe that Appellants' Specification gives no indication that the use of an ASIC, rather than other equivalent components, provides any unexpected results. We find that the Examiner's asserted combination of Bechtel and Markwell amounts to the combination of familiar elements according to known methods, yielding predictable results. *See KSR* at 1739, *supra*.

Similarly, we find Appellants' argument that Bechtel teaches away from Markwell to be unpersuasive. First, the argument that Bechtel teaches away from Markwell because Markwell's battery-powered detector unit would be inappropriate to drive a high-power flashtube is more applicable to an argument that Markwell teaches away from modification by Bechtel,

rather than the opposite, which is the rejection at issue. Second, the modification proposed by the Examiner is that Bechtel's off-the-shelf IC be replaced with an ASIC such as used by Markwell. The Examiner relies on Bechtel, not Markwell, to teach the flashtube and the (unclaimed) details of properly driving a flashtube (Ans. 3-4). As a result, Appellants' assertion that flashtubes and LEDs are not interchangeable is not germane to the Examiner's position.

We agree with the Examiner that Bechtel in combination with Markwell renders claim 1 obvious. We therefore do not find error in the Examiner's rejection of claim 1 under 35 U.S.C. § 103.

Claims 4 and 5

Appellants argue that Bechtel in combination with Markwell does not teach an ASIC for triggering a flash circuit having a flashtube, further comprising a current limiting circuit that limits an input current level (claim 4), more specifically continuously sensing an input current level (claim 5) (Br. 8-10). We agree with the Examiner, however, that Bechtel teaches such a circuit (Ans. 8; FF 6). Further, to the extent Appellants' argument is that claims 4 and 5 are patentable for the reasons expressed with respect to independent claim 1, we affirm the rejections of claims 4 and 5 for the same reasons. We therefore do not find error in the Examiner's rejection of claims 4 and 5 under 35 U.S.C. § 103.

Claims 7-9

With respect to claims 7, 8, and 9, Appellants argue that Bechtel in combination with Markwell does not teach an ASIC for triggering a flash circuit having a flashtube, wherein the ASIC is deployed in an 18, 16, or 8

pin package respectively (Br. 10-11). We observe, however, that Appellants have disclosed no criticality to the choice of 8, or 16, or 18 pins being used for the ASIC in question. We further observe that Appellants' Brief contains no argument traversing the Examiner's position in the Final Rejection that the number of pins of the package would have been obvious to the skilled artisan (Final Rej. 3). To the extent Appellants' argument is that claims 7-9 are patentable for the reasons expressed with respect to independent claim 1, we affirm the rejections of claims 7, 8, and 9, for the same reasons. We also agree with the Examiner that the selection of the number of pins in the ASIC package, absent any criticality disclosed in Appellants' Specification, would have been an obvious matter of design choice.

We do not find error in the Examiner's rejection of claims 7-9 under 35 U.S.C. § 103.

Claims 11 and 13

Claim 11 recites that the ASIC "provides a charge cycle that is greater than 8 kilohertz." The Examiner's position is that "it would have been obvious that any appropriate charging cycle frequency can be used as flash rate as user desired" (Ans. 9).

Appellants' Specification states, however, that its 16 kHz charge cycle "results in the benefits of a strobe that is quieter (16 kHz is not typically audible), and a boost inductor has a lower inductance (and is therefore smaller and cheaper)" (FF 2). Because Appellants have disclosed the criticality of their selected charge cycle frequency, we are persuaded by Appellants' argument that the asserted combination of references does not teach or suggest the claim limitations.

Claim 13 depends from claim 11, with the further limitation that the ASIC selects an audio frequency for the audio warning signal.[2]

We therefore find error in the Examiner's rejection of claims 11 and 13 under 35 U.S.C. § 103.

Claim 12

Appellants argue that Bechtel in combination with Markwell does not teach an ASIC for triggering a flash circuit having a flashtube, further comprising an audio circuit that generates an audio warning signal (Br. 12-13). We agree with the Examiner, however, that Bechtel teaches an audio circuit (Ans. 9; FF 7). Further, to the extent Appellants' argument is that claim 12 is patentable for the reasons expressed with respect to independent claim 1, we affirm the rejection of claim 12, for the same reasons. We therefore do not find error in the Examiner's rejection of claim 12 under 35 U.S.C. § 103.

Claims 14 and 15

Appellants argue that Bechtel in combination with Markwell does not teach an ASIC for triggering a flash circuit having a flashtube, further comprising a synchronization detection circuit which receives a sync signal to trigger a flash (claim 14) (Br. 14), or wherein the ASIC provides a transistor drive capability of greater than 7.3 volts (claim 15) (Br. 14-15). We agree with the Examiner, however, that Bechtel teaches such a synchronization detection circuit (Ans. 5; FF 8), and that Bechtel teaches an integrated circuit with such a drive capability (FF 9). Further, to the extent

[2] Claim 13 appears to lack proper antecedent basis for "said audio warning signal," which is first introduced in claim 12.

Appellants' argument is that claims 14 and 15 are patentable for the reasons expressed with respect to independent claim 1, we affirm the rejection of claims 14 and 15, for the same reasons. We therefore do not find error in the Examiner's rejection of claims 14 and 15 under 35 U.S.C. § 103.

Claim 16

Claim 16 requires an audio circuit for generating an audio warning signal, with an ASIC coupled to the audio circuit which selects an audio frequency for said audio warning signal.

The Examiner argues that Bechtel in combination with Markwell meets the claim for the reasons expressed with regard to claim 1, and because Bechtel is asserted to teach an alarm unit generating an audio warning signal, its IC selecting an audio frequency (FF 7).

Bechtel is silent as to the selection of more than one frequency by integrated circuit U1. Appellants' Specification, however, clearly sets forth that the horn tone of the audio warning signal is varied between a plurality of frequencies (FF 3). Further, the dictionary definition of "select" is "to choose in preference to another or others; pick out" (FF 18). Because Bechtel does not teach that its integrated circuit selects from more than one audio frequency, we find that the Examiner's asserted combination of Bechtel and Markwell does not teach all the elements of claim 16.

We therefore find error in the Examiner's rejection of claim 16 under 35 U.S.C. § 103.

Claims 2 and 3

Appellants argue that the Examiner's asserted combination of Bechtel with Markwell and Preston fails for the reasons expressed *supra* with regard to claim 1, and further that the references do not teach an ASIC for triggering a flash circuit having a flashtube, further comprising a switch having a plurality of selectable positions representative of flash intensity settings (claim 2) (Br. 18-19), specifically four intensity settings (claim 3) (Br. 19-20).

We find Appellants' arguments unpersuasive because the Examiner states at pages 6-7 of the Answer that Preston teaches "a rotary switch for setting the amplitude/intensity of the horn and light" (FF 13). A rotary switch, being continuously variable, may be set at a large number of positions, certainly at least four. We concur with the Examiner's reasoning that it would have been obvious to modify the combination of Bechtel and Markwell to "implement an intensity settings switch as suggested by Preston … for the purpose of easy [*sic*, ease] and safety" (Ans. 7). Further, because we affirm *supra* the rejection of claim 1, we are not persuaded by Appellants' remarks regarding claim 1.

We therefore do not find error in the Examiner's rejection of claims 2 and 3 under 35 U.S.C. § 103.

Claim 6

Appellants argue that the Examiner's asserted combination of Bechtel with Markwell and Kataoka fails for the reasons expressed *supra* with regard to claim 1, and further that the references do not teach not teach an ASIC for

triggering a flash circuit having a flashtube, further comprising a DC to DC converter providing over voltage protection (Br. 20-22).

We find Appellants' arguments unpersuasive because the Examiner refers the reader to Kataoka's teaching of such a DC to DC converter (FF 15). We concur with the Examiner's reasoning that it would have been obvious to employ a DC to DC converter as suggested by Kataoka "for the purpose of regulating and stabilizing the voltage supply to IC" (Ans. 7). Further, because we affirm *supra* the rejection of claim 1, we are not persuaded by Appellants' remarks regarding claim 1.

We do not find error in the Examiner's rejection of claim 6 under 35 U.S.C. § 103.

Claim 10

Claim 10 further limits the flash circuit, requiring a voltage doubler. The Examiner seeks to modify the combination of Bechtel and Markwell to include the voltage doubler taught by Hata (Ans. 7-8). Hata's voltage doubler, however, is not part of its flash circuit, but rather has to do with providing a drive voltage to an EEPROM (FF 17). We therefore find that the Examiner has not made out a *prima facie* case of obviousness.

As a result, we find error in the Examiner's rejection of claim 10 under 35 U.S.C. § 103.

CONCLUSION OF LAW

We conclude that Appellants have not shown that the Examiner erred in rejecting claims 1-9, 12, 14, and 15. Claims 1-9, 12, 14, and 15 are not patentable.

We conclude that Appellants have shown that the Examiner erred in rejecting claims 10, 11, 13, and 16. On the record before us, claims 10, 11, 13, and 16 have not been shown to be unpatentable.

DECISION

The Examiner's rejection of claims 1-9, 12, 14, and 15 is affirmed. The Examiner's rejection of claims 10, 11, 13, and 16 is reversed.

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-IN-PART

KIS

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