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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
11/265,875	11/03/2005	Juergen Riedmann	21295.0122US1 (H6057US)	7622
70098	7590	01/30/2013	EXAMINER	
Maria Eliseeva Patentbar International PC 1087 Beacon St., Suite 303 Newton, MA 02459-1700			ALLEN, STEPHONE B	
			ART UNIT	PAPER NUMBER
			2872	
			NOTIFICATION DATE	DELIVERY MODE
			01/30/2013	ELECTRONIC

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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte JUERGEN RIEDMANN, INGO BOEHM, VOLKER
LEIMBACH, HEINRICH ULRICH, and HOLGER BIRK

Appeal 2010-004938
Application 11/265,875
Technology Center 2800

Before JEFFREY S. SMITH, BRUCE R. WINSOR,
and GLENN J. PERRY, *Administrative Patent Judges*.

WINSOR, *Administrative Patent Judge*.

DECISION ON APPEAL

Appellants appeal under 35 U.S.C. § 134(a) from a final rejection of claims 1, 4, and 6-9, which constitute all the claims pending in this application. Claims 2, 3, and 5 are cancelled. We have jurisdiction under 35 U.S.C. § 6(b).

We reverse.

STATEMENT OF THE CASE

[Appellants'] invention relates to a device for examining and manipulating microscopic objects with a microscope having a light source that serves to illuminate the object, and which generates an illumination light beam that runs along and [sic] illumination beam path, that can be guided over or through the object by means of a beam deflector, with a detector to detect light emitted from the object that runs along the detection beam path, with a primary beam splitter, and with a light source, which generates a manipulation light beam that runs along an illumination beam path, that serves to manipulate the object.

Abstract. Claim 1, which is illustrative of the invention, reads as follows (emphases added):

1. A device for examining and manipulating microscopic objects with a microscope, the device comprising:
 - a first light source to illuminate an object, which first light source generates an illumination light beam that propagates along an illumination beam path, *the illumination light beam being guided over or through an object by means of a beam deflector disposed in the illumination beam path;*
 - a detector to detect the light emitted from the object that propagates along a detection beam path having a primary beam splitter;
 - a second light source to generate a manipulation light beam that propagates along a manipulation beam path and serves to manipulate the object; and
 - an arrangement for coupling the manipulation light beam with the illumination light beam;
 - wherein the arrangement for coupling the manipulation light beam with the illumination light beam is disposed in the illumination beam path;
 - wherein the arrangement for coupling the manipulation light beam with the illumination light beam is implemented as a

beam splitter, or as a mirror with an attached expansion optic, or as an acousto-optical element; and

wherein manipulating of the object by the manipulation light beam is performed by the same beam deflector disposed in the illumination beam path guiding the manipulation light beam coupled with the illumination light beam.

Claims 1, 4, and 6-9 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Knebel '800 (US 2002/0020800 A1; published Feb. 21, 2002), Kashima (US 6,094,300; issued July 25, 2000), and Knebel '440 (US 2002/0021440 A1; published Feb. 21, 2002). Ans. 4-5.

Rather than repeat the arguments here, we refer to the Briefs (App. Br.; Reply Br.) and the Answer (Ans.) for the respective positions of Appellants and the Examiner.

ISSUE

The pivotal issue raised by Appellants' contentions is as follows:¹

Does the combination of Knebel '800, Kashima, and Knebel '440 teach or suggest "[an] illumination light beam being guided . . . by means of a beam deflector disposed in the illumination beam path" and "the same beam deflector disposed in the illumination beam path guiding [a] manipulation light beam coupled with the illumination light beam," as recited in claim 1? More particularly, does Knebel '800 teach away from the combination with Kashima and Knebel '440 to produce the invention recited in claim 1?

¹ Appellants' contentions raise additional issues. However, as we are persuaded of Examiner error with regard to the identified issue, which is dispositive of the appeal, we do not address the additional issues.

ANALYSIS

The Examiner finds that Knebel '800 discloses all of the elements of claim 1 except the "claimed arrangement of light sources and the coupling arrangement being a beamsplitter." Ans. 4. The Examiner further finds that Kashima teaches two light paths combined with a beamsplitter that guides both beam paths, Ans. 4 (citing Kashima Fig. 10), and that Knebel '440 the use of an acoustooptical beamsplitter (AOBS), *id.* (citing Knebel '440 ¶ [0021]). The Examiner concludes as follows:

It would have been obvious to one of ordinary skill at the time the invention was made to have the Knebel '800 include the beamsplitter AOBS of Knebel '440 for the purpose of efficiently and precisely coupling the beam paths. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have the Knebel '800 invention combine the light sources in the manner taught by Kashima for the purpose of reducing the number of scanners used in the system.

Ans. 4-5.

Appellants contend Knebel '800 teaches away from using Kashima's and Knebel '440's teachings of two light beam paths guided by a single beamsplitter to guide Knebel '800's manipulation and illumination beams together. App. Br. 14-15. In particular, Appellants point to Knebel '800 at Fig. 4 and ¶ [0057] as teaching that the illumination beam should be deflected independently of the manipulation beam. Appellants' assert this amounts to a teaching away from the combination. "A reference may be said to teach away when a person of ordinary skill, upon reading the reference, . . . 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). We agree with Appellants.

Although Kashima and Knebel '440 each discloses guiding two light beams together using a single beam deflector, neither discloses a manipulation light beam. *See* App. Br. 10-12. Claim 1 recites: “the same beam deflector . . . guiding the manipulation light beam coupled with the illumination light beam.” However, Knebel '800 states that “[t]he deflection of the illumination light beam 5 is carried out independently of the deflection of the manipulation light beam 9.” Knebel '800 ¶ [0057] (ll. 5-7). In an exemplary manipulation, illustrated in Knebel '800's Figures 4 and 5, Knebel '800 describes the use of optical tweezers 27 and 28 (Fig. 5) acting at manipulation sites 29, 30 (Figs. 4, 5) to determine the contraction forces of a muscle cell 26. As illustrated, the manipulation is carried out independently of the scanning pattern 36 (Fig. 4) of the illumination focus. *See generally* Knebel '800 ¶¶ [0061]-[0062]. We, therefore, conclude that Knebel teaches independent control of the manipulation and illumination light beams and would have led a person of ordinary skill in the art on a path divergent from “the same beam deflector . . . guiding the manipulation light beam coupled with the illumination light beam,” as recited in claim 1. *See Gurley*, 27 F.3d at 553. Accordingly, we conclude that the person of ordinary skill in the art would not have applied Kashima's or Knebel'440's teaching of guiding two light beams with a single beam deflector with Knebel '800's teaching of independently guided manipulation and illumination light beams.

The Examiner asserts that Knebel '800's paragraphs [0022], [0027], and [0031] teach that “Knebel '800 at least contemplated the combination of the illumination and manipulation beams prior to incidence on the deflector.” Ans. 6; *see generally* Ans. 6-9.

The Examiner points out that Knebel '800 teaches that “manipulation of the object is carried out *simultaneously* with the confocal object detection.” Knebel '800 ¶ [0022] (emphases added). The Examiner interprets “simultaneously” as follows: “The term simultaneous is defined as ‘exactly coincident’ (Merriam-Webster's Collegiate Dictionary Tenth Edition). Two light beams scanned exactly coincident would require a joint scanner, otherwise, the two beams would not be coincident.” Ans. 7. In other words the Examiner interprets “simultaneously” to mean exactly coincident in time and location. However, as pointed out by Appellants, Reply Br. 11, the Examiner does not quote the complete definition, and incorrectly interprets Knebel '800's use of the term. The pertinent dictionary definition is “**simultaneous** . . . *adj.* . . . **1:** existing or occurring at the same time: exactly coincident . . . **simultaneously** *adv.*” MERRIAM-WEBSTER'S COLLEGIATE DICTIONARY 1094 (10th ed. 1999). We agree with Appellants, Reply Br. 11, that one of ordinary skill in the art would have understood Knebel's '800's use of “simultaneously” to mean exactly coincident *in time*, so that the manipulation of objects occurs at the same time as the illumination of the objects. “Simultaneously” would not have been understood to contemplate that the illumination beam and the manipulation beam be controlled by a joint scanner, i.e., guided by the same beam deflector. *See* App. Br. 11.

The Examiner points to Knebel '800's statement that “[b]eam combination in which one of the scanning mirrors arranged in the common beam path is used as a beam deflection device for the beam combination, is also conceivable,” Knebel '800 ¶ [0027] (ll. 7-10), as compelling evidence that Knebel '800 contemplates both light sources incident at the same

deflector. Ans. 6. However, the claim does not merely require that the beams be incident at the same beam deflector, but rather that they be guided by the same beam deflector. As pointed out by Appellants, Ans. 12, the sentence following the one quoted by the Examiner reads as follows: “In this case, the scanning mirror is transparent for one of the two beam paths, whereas it acts as a mirror for the other beam path.” Knebel ‘800 ¶ [0027] (ll. 10-12). We agree that “[a] scanning mirror cannot be validly interpreted as scanning the beam for which it is transparent just because it scans some other beam.” Reply Br. 13. We further agree that

[t]he scanning mirror, which is transparent for one of the two beam paths, whereas it acts as a mirror for the other beam path, fails to provide evidence of Knebel' 800 contemplating manipulating of an object by a manipulation light beam being performed by a beam deflector guiding a manipulation light beam coupled with an illumination light beam.

Id.

The Examiner points to Knebel ‘800’s statement that “[t]he beam deflection device or the beam deflection devices, in a specific embodiment, can be coupled to the microscope interface for conventional direct-light illumination and/or to an additional interface on the microscope,” Knebel ¶ [0031] (ll. 1-4), as further evidence that Knebel ‘800 contemplates both light sources incident at the same deflector. Ans. 6. The Examiner explains that

[t]he use of the singular and plural together indicate deflectors may be two or more separate elements or a single element. If only a single element is used the then both the illumination and manipulation must be incident the same deflector because both must be scanned according to the teachings of Knebel '800.

Id. Appellants contend that Knebel ‘800’s paragraph [0031] merely teaches that an existing microscope may be retrofitted with one or more additional

Appeal 2010-004938
Application 11/265,875

deflection device to function in accordance with Knebel '800's teachings. *See* Reply Br. 14. Appellants further contend that "[t]his addition not 'necessitate' a beam deflector guiding a manipulation light beam coupled with an illumination light beam." *Id.* We agree with Appellants.

We conclude that Appellants have demonstrated error in the rejection of claim 1. Accordingly, we will not sustain the rejection of (1) claim 1; (2) claim 7, which has limitations that substantially parallel those of claim 1 and was rejected together with claim 1; and (3) claims 4, 6, 8, and 9, which depend variously from claims 1 and 7.

ORDER

The decision of the Examiner to reject claims 1, 4, and 6-9 is reversed.

REVERSED

rwk