

The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte GURTEJ S. SANDHU
and TRUNG T. DOAN

Appeal No. 2005-1031
Application No. 09/998,073

ON BRIEF

Before HANLON, TIMM and DELMENDO, Administrative Patent Judges.

HANLON, Administrative Patent Judge.

This is a decision on an appeal under 35 U.S.C. § 134 from the final rejection of claims 46-58 and 60-69, all of the claims pending in the application. The claims on appeal are directed to a system for treating the surface of a workpiece. Claims 46 and 64 are representative and read as follows:

46. A system for chemically treating a surface of a workpiece comprising:

a supply of a transmission gas which is substantially nonattenuating to preselected wavelengths of electromagnetic radiation produced by said system;

a supply of a gaseous constituent;

an inlet structure for exposing the workpiece to a controlled gaseous atmosphere containing said transmission gas and for providing a flow of said gaseous constituent to the surface of said workpiece; and

a source of electromagnetic radiation adapted to converge a beam produced thereby in said flow in close proximity to the surface of the workpiece, but spaced a finite distance therefrom, to dissociate said gaseous constituent to produce a high flux of activated reactive species that chemically treats said surface of said workpiece.

64. A system for treating a surface of a workpiece with electromagnetic radiation, said system comprising:

a first gas source configured to provide a transmission gas defined by a first radiation absorption coefficient;

a second gas source configured to provide a gaseous constituent defined by a second radiation absorption coefficient such that said gaseous constituent is more absorptive of said electromagnetic radiation than said transmission gas;

a chamber comprising:

a workpiece-containing portion; and

an inlet configured to establish fluid communication between said first and second gas sources and said chamber such that a gaseous atmosphere is defined therein, said gaseous atmosphere comprising a first region spaced from said workpiece surface and configured to accept said transmission gas, and a second region disposed between said first region and said workpiece surface and configured to accept said gaseous constituent; and

an electromagnetic radiation source configured such that upon operation of said electromagnetic radiation source, a beam produced thereby converges in said second region in close proximity to, but not on, said workpiece surface to dissociate said gaseous constituent into an activated species that chemically reacts with said workpiece surface.

The sole issue on appeal is whether claims 46-58 and 60-69 were properly rejected under 35 U.S.C. § 102(b) as being anticipated by Elliott et al.^{1,2}

Grouping of claims

Claims 46 and 64 are the only independent claims in the application. According to appellants, these claims do not stand or fall together. See Brief, p. 4. Therefore, for purposes of this appeal, the patentability of claims 46 and 64 will be considered separately. Claims 47-58 and 60-63 stand or fall with the patentability of claim 46, and claims 65-69 stand or fall with the patentability of claim 64. See 37 CFR § 1.192(c)(7) (2003); 37 CFR § 41.67(c)(vii) (2004).

Discussion

A. Rejection of claims 46-58 and 60-63

Claims 46-58 and 60-63 are rejected under 35 U.S.C. § 102(b) as being anticipated by Elliott. Elliott discloses an apparatus for cleaning the surface of a substrate using a laser beam of UV radiation. Specifically, Elliott discloses that foreign material may be removed from the surface of a substrate by delivering to the foreign material laser energy which ablates the

¹Appellants indicate that claims 62-63 and 66-68 are also objected to under 37 CFR § 1.75(c) and request that the objections be held in abeyance until allowable subject matter is indicated. See Brief, p. 2; MPEP § 706.01 (8th ed., Rev. 2, May 2004).

²U.S. Patent No. 5,669,979 granted on September 23, 1997, to Elliott et al. (hereinafter "Elliott").

material from the surface. The laser beam is adjusted to strike the surface of the substrate, and at the point of contact, the beam gives the appearance of a knife edge (Figures 2 and 2A). An input fluid, e.g., an elemental gas or a mixture of elemental gases, is used to reduce or prevent the ablation components of the foreign material from redepositing onto the substrate surface. The input fluid may also absorb the laser energy to generate excited species that react with the foreign material on the surface of the substrate. See col. 5, line 43-col. 6, line 5; col. 10, lines 9-14; col. 12, lines 3-6.

It appears that the sole disagreement between the examiner and appellants is whether Elliott describes the following limitation in claim 46:

[A] source of electromagnetic radiation adapted to converge a beam produced thereby in said flow in close proximity to the surface of the workpiece, but spaced a finite distance therefrom, to dissociate said gaseous constituent to produce a high flux of activated reactive species that chemically treats said surface of said workpiece.

We interpret claim 46 as requiring a system comprising a source of electromagnetic radiation so structured that it can converge a beam in close proximity to the surface of the workpiece, but spaced a finite distance therefrom. See In re Venezia, 530 F.2d 956, 959, 189 USPQ 149, 151-52 (CCPA 1976) (claim reciting "a pair of sleeves . . . each sleeve of said pair adapted to be fitted over the insulating jacket of one of said cables" requires each sleeve to be so structured or dimensioned that it can be fitted over the insulating jacket of a cable).

The examiner points out that in Elliott the laser beam is shown to converge at the

workpiece surface rather than at a finite distance from the workpiece surface as in the claimed invention. See Answer, p. 5; Elliott, Figure 15, element 416. However, the examiner argues that the optical component that functions to converge the beam in Elliott is adjustable, and accordingly, the apparatus of Elliott could function in the same manner as the claimed invention. See Answer, pp. 9-10. The examiner maintains that the apparatus disclosed in Elliott "is wholly identical, and structurally indistinguishable from the claimed apparatus." Answer, p. 11.

Appellants respond as follows (Reply brief, p. 2):

Although the optical component that functions to converge the beam at a point is adjustable as noted by the examiner on page 9 of the Examiner's Answer, the appellants note that the location of the beam's point of convergence as taught by Elliott et al. is either at the surface of the workpiece to produce a knife edge (Fig. 2A) or below the surface of the workpiece to produce the narrow reaction region (Fig. 2).

Appellants arguments are not persuasive. There appears to be no dispute that the optical component of the laser system that functions to converge the beam in Elliott is adjustable. Therefore, the electromagnetic radiation source in Elliott is so structured that it can converge a beam in close proximity to the surface of the workpiece, but spaced a finite distance therefrom, as required by claim 46. For this reason, the rejection of claim 46 under 35 U.S.C. § 102(b) as being anticipated by Elliott is affirmed.

The patentability of claims 47-58 and 60-63 stands or falls with the patentability of claim

46. Therefore, the rejection of claims 47-58 and 60-63 under 35 U.S.C. § 102(b) as being anticipated by Elliott is also affirmed.

B. Rejection of claims 64-69

Claims 64-69 are rejected under 35 U.S.C. § 102(b) as being anticipated by Elliott. In contrast to claim 46, claim 64 requires an electromagnetic radiation source "configured" such that upon operation of the source a beam produced thereby converges at a location in close proximity to, but not on, the workpiece surface.

Appellants do not define the term "configured" in the specification. However, Merriam-Webster's Collegiate Dictionary, 241 (10th ed. 2000) (copy attached), defines the term "configured" as "to set up for operation esp. in a particular way." See Texas Digital Sys. Inc. v. Telegenix Inc., 308 F.3d 1193, 1202, 64 USPQ2d 1812, 1818 (Fed. Cir. 2002) ("unless compelled otherwise, a court will give a claim term the full range of its ordinary meaning as understood by persons skilled in the relevant art"). Therefore, we interpret claim 64 as requiring a system comprising an electromagnetic radiation source set up for operation in a particular way for a given workpiece such that upon operation of the source a beam produced thereby converges at a location in close proximity to, but not on, the workpiece surface.

In Elliott, the electromagnetic radiation source is "configured" for a given workpiece such that upon operation of the source a beam produced thereby converges at the workpiece surface rather than at a location in close proximity to, but not on, the workpiece surface as required by claim 64. We recognize that the optical component of the laser system that functions

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to converge the beam in Elliott is adjustable. Nevertheless, Elliott does not disclose that the optical component is adjusted such that upon operation of the electromagnetic radiation source a beam produced thereby converges at a location in close proximity to, but not on, the workpiece surface. Therefore, Elliott does not describe the invention of claim 64, and the rejection of claim 64 under 35 U.S.C. § 102(b) as being anticipated by Elliott is reversed. See Verdegaal Bros., Inc. v. Union Oil Co., 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987) ("A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.").

The patentability of claims 65-69 stands or falls with the patentability of claim 64. Therefore, the rejection of claims 65-69 under 35 U.S.C. § 102(b) as being anticipated by Elliott is also reversed.

Conclusion

The rejection of claims 46-58 and 60-63 under 35 U.S.C. § 102(b) as being anticipated by Elliott is affirmed. The rejection of claims 64-69 under 35 U.S.C. § 102(b) as being anticipated by Elliott is reversed.

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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; REVERSED-IN-PART

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Administrative Patent Judge)	
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)	BOARD OF PATENT
CATHERINE TIMM)	APPEALS AND
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