UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte MARK CHAPMAN, GIOVANI GONGORA, and ROGER VALE

Appeal 2008-2345
Application 10/358,753
Technology Center 3600

Decided: September 23, 2008

Before JENNIFER D. BAHR, LINDA E. HORNER, and
BIBHU R. MOHANTY, *Administrative Patent Judges*.

HORNER, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

Mark Chapman et al. (Appellants) seek our review under 35 U.S.C. § 134 of the final rejection of claims 1-4, 6, 7, 22-25, 27-32, 34, and 35, which are all of the pending claims. We have jurisdiction under 35 U.S.C. § 6(b) (2002).

SUMMARY OF DECISION

We REVERSE.

THE INVENTION

The Appellants' claimed invention relates to traction and anchoring surfaces that have diamond traction surfaces (Spec. 1:¶0001). Claim 1, reproduced below, is representative of the subject matter on appeal.

> 1. A traction control device for gripping surfaces, the traction control device comprising:
>
> a base;
>
> a contact insert fixed to the base, wherein the contact insert comprises a contact surface, the contact surface comprising a polycrystalline diamond region;
>
> wherein the polycrystalline diamond region is bonded to a nonferrous substrate.

THE REJECTIONS

The Examiner relies upon the following as evidence of unpatentability:

Lowder	US 3,894,673	Jul. 15, 1975
Nash	US 4,893,859	Jan. 16, 1990
Frushour	US 5,011,515	Apr. 30, 1991

The Appellants seek our review of the rejection of claims 1-4, 6, 7, 22-25, 27-32, 34, and 35 under 35 U.S.C. § 103(a) as being unpatentable over Nash[1] and Frushour.

ISSUE

The issue before us is whether the Appellants have shown that the Examiner erred in rejecting the pending claims as unpatentable over Nash and Frushour. This issue turns on whether one having ordinary skill in the art would have had a reason, in view of the prior art, to make a traction control device having a contact insert with a contact surface comprising a polycrystalline diamond region.

FINDINGS OF FACT

We find that the following enumerated findings are supported by at least a preponderance of the evidence. *Ethicon, Inc. v. Quigg*, 849 F.2d 1422, 1427 (Fed. Cir. 1988) (explaining the general evidentiary standard for proceedings before the Office).

1. Nash discloses a clamp "for lifting and tilting long concrete planks or panels" (Nash, col. 1, ll. 5-6).
2. Nash describes that the very high weight of the concrete panels results in very high torque at the interface of the concrete panel and the clamping head and that even a very slight slippage at the

[1] Nash incorporates by reference the disclosure of Lowder (Nash, col. 2, ll. 10-12 and col. 3, ll. 53-59).

interface tends to cause the concrete to crack and spall (Nash, col. 1, ll. 41-45).

3. Nash teaches incorporating diamond crystals into the face of the steel clamping head that contacts the side wall of the concrete panel to increase the resistance to movement between the clamp head interface and the concrete side walls (Nash, col. 1, ll. 60-64).

4. In particular, Nash describes that "[t]he upper projection[s] of the diamond crystals dig into the concrete and markedly decreases [*sic*] the incidence of concrete spalling by reducing slippage" (Nash, col. 1, ll. 65-67).

5. As such, the focus of Nash is on constructing a gripping surface for clamping concrete panels that is capable of gripping the panels while at the same time avoiding damage to the panels.

6. Nash discloses that the diamond crystals can be bound to the steel face by brazing a monolayer of diamond to the substrate surface, as disclosed in U.S. Patent No. 3,894,673 to Lowder (Nash, col. 3, ll. 53-57).

7. Frushour discloses "a sintered polycrystalline diamond composite for use in rock drilling, machining of wear resistant metals, and other operations which require the high abrasion resistance or wear resistance of a diamond surface" (Frushour, col. 1, ll. 8-12).

8. Frushour does not disclose that a polycrystalline diamond composite is suitable for use in applications requiring a gripping surface.

9. In fact, Frushour does not discuss the gripping properties of a substrate covered with a polycrystalline diamond composite.

10. Frushour focuses on creating a bond between the PDC diamond layer and the metal carbide support to reduce the concentration of force which causes delamination between the polycrystalline diamond table and the substrate and substrate cracking in prior art composites when used in rock drilling and metal machining (Frushour, col. 1, ll. 29-38, col. 3, ll. 13-31, and col. 4, ll. 6-29).

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). 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*, 383 U.S. at 12), 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 field 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 Supreme Court stated that "[f]ollowing these principles may be more difficult in other cases than it is here because the claimed subject matter may involve more than the simple substitution of one known element

for another or the mere application of a known technique to a piece of prior art ready for the improvement." *Id.* The Court explained:

> Often, it will be necessary for a court to look to interrelated teachings of multiple patents; the effects of demands known to the design community or present in the marketplace; and the background knowledge possessed by a person having ordinary skill in the art, all in order to determine whether there was an apparent reason to combine the known elements in the fashion claimed by the patent at issue.

Id. at 1740-41. The Court noted that "[t]o facilitate review, this analysis should be made explicit." *Id.* (citing *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006) ("[R]ejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness")). However, "the analysis need not seek out precise teachings directed to the specific subject matter of the challenged claim, for a court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ." *Id.*

ANALYSIS

Each of independent claims 1, 22, and 29 recites a traction control device having a contact insert with a contact surface comprising polycrystalline diamond. The Appellants argue that "Nash and Frushour simply fail to provide any motivation whatsoever for replacing the discrete diamond grit 100 bonded to the steel clamp head faces 38 disclosed in Nash

with the polycrystalline diamond layer 6 of the compact blank disclosed in the Frushour reference" (App. Br. 8). In particular, the Appellants contend that the smooth polycrystalline diamond layer "is unlikely to 'dig into the concrete' in the same manner as the diamond crystals disclosed in Nash" (App. Br. 10).

The Examiner found that Nash discloses a gripping apparatus having the claimed elements except that Nash does not disclose the specific materials as claimed. The Examiner found that "Frushour discloses an abrasion tool blank, similar to the type of tool referenced in the Nash patent (col. 3, line 56) formed of a polycrystalline diamond composite bonded to a tungsten carbide substrate." The Examiner has also found that Frushour discloses that the manner in which the PCD layer is bonded to the tungsten carbide base results in a much stronger bond due to the three-dimensional nature of the bond (Ans. 5). The Examiner concluded that it would have been obvious to modify Nash to form the base and contact surface out of tungsten carbide and polycrystalline diamond, respectively, as taught by Frushour "in order to create a very secure engagement with the workpiece being lifted without damaging the surface thereof." (Ans. 3.)

Nash discloses a clamp for lifting and tilting long concrete planks or panels that incorporates diamond crystals into the face of the steel clamping head to increase the resistance to movement between the clamp head interface and the concrete side walls to avoid cracking or spalling of the concrete (Facts 1-3). In particular, Nash describes that "[t]he upper projection[s] of the diamond crystals dig into the concrete and markedly

decreases [*sic*] the incidence of concrete spalling by reducing slippage" (Fact 4). As such, the focus of Nash is on constructing a gripping surface for clamping concrete panels that is capable of gripping the panels while at the same time avoiding damage to the panels (Fact 5).

Frushour discloses "a sintered polycrystalline diamond composite for use in rock drilling, machining of wear resistant metals, and other operations which require the high abrasion resistance or wear resistance of a diamond surface" (Fact 7). Frushour does not disclose that polycrystalline diamond composite is suitable for use in applications requiring a gripping surface (Fact 8). In fact, Frushour does not discuss the gripping properties of a substrate covered with a polycrystalline diamond composite (Fact 9). Rather, Frushour focuses on creating a bond between the PDC diamond layer and the metal carbide support to reduce the concentration of force which causes delamination between the polycrystalline diamond table and the substrate and substrate cracking in prior art composites when used in rock drilling and metal machining (Fact 10).

The Examiner makes the conclusory statement that a layer of PCD bonded to a tungsten carbide base would achieve "the predictable result of producing a secure gripping force on a concrete slab or the like while preventing any surface damage to the slab" (Ans. 5). The Examiner has not, however, established on the record that one having ordinary skill in the art would have known that a contact surface made of a polycrystalline diamond composite would work in the gripping operation of Nash. In other words, the Examiner has not shown that polycrystalline diamond composite has an

established function as a gripping surface. Nor do we agree that all diamond surfaces inherently have gripping properties per se that would have led one having ordinary skill in the art to simply substitute one diamond surface for another. In other words, the Examiner has not established that the diamond crystals of Nash and the polycrystalline diamond composite of Frushour are known equivalents in terms of their gripping properties in the art. As noted by the Appellants, polycrystalline diamond composites are manufactured in a manner that results in a smooth layer, while the individual diamond crystals of Nash are used to dig into the surface of the concrete to grip the surface. Thus, it is not clear from the record whether the smooth polycrystalline diamond composite layer of Frushour would suffice to grip the concrete panels of Nash.

Further, the Examiner takes the position that one having ordinary skill in the art would have been led to use the PCD/tungsten carbide combination of Frushour in the gripping surface of Nash because Frushour teaches that the manner in which the PCD layer is bonded to the tungsten carbide base results in a much stronger bond (Ans. 5). We disagree with this conclusion. Frushour teaches that its method of bonding PCD to a tungsten carbide base results in a much stronger bond than the prior art methods of bonding PCD to tungsten carbide to form a composite polycrystalline diamond compact for use in rock drilling, machining of wear resistant metals, and other operations which require high abrasion resistance or wear resistance of a diamond surface (Facts 7 & 10). There is no indication in the record; however, that delamination is a problem in the device of Nash. Nash is not

using its clamp for rock drilling or high wear machining or any other high abrasion or wear purpose. As such, the diamond crystal surface of Nash's clamp does not undergo the same forces as the surfaces used in Frushour. Thus, the Examiner has failed to sufficiently establish that one having ordinary skill in the art would have been led to substitute the PCD/tungsten carbide combination in place of the diamond crystal/steel substrate gripping surfaces of Nash.

The Examiner appears to also conclude that because Nash incorporates the disclosure of Lowder, pertaining to an abrasive cutting tool, it would have been obvious to use materials from other abrasive cutting tools, such as Frushour, in the clamp face of Nash (Ans. 3). We disagree. Nash incorporates the disclosure of Lowder for its teaching of a method to bind the diamond crystals to the steel face in Nash (Fact 6). This reference to Lowder does not imply, however, that any other materials used for abrasive cutting tools would work in the gripping operation of Nash. Rather, Nash and Lowder show simply that diamond crystals were known in the art to be useful both as a gripping surface, as disclosed in Nash, and as an abrasive cutting surface, as disclosed in Lowder. As such, the Examiner has failed to set forth a prima facie case of obviousness of the claims.

With regard to remaining rejected dependent claims 2-4, 6, 7, 23-25, 27, 28, 30-32, 34, and 35, because these claim rejections rely upon the underlying rejection of independent claims 1, 22, and 29, we also reverse the examiner's rejection of these claims. *See In re Fine*, 837 F.2d 1071 (Fed.

Cir. 1988) (If an independent claim is nonobvious under 35 U.S.C. § 103, then any claim dependent therefrom is nonobvious).

CONCLUSION

We conclude the Appellants have shown that the Examiner erred in rejecting claims 1-4, 6, 7, 22-25, 27-32, 34, and 35 under 35 U.S.C. § 103(a) as being unpatentable over Nash and Frushour.

DECISION

The decision of the Examiner to reject claims 1-4, 6, 7, 22-25, 27-32, 34, and 35 is reversed.

REVERSED

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