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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte THORSTEN BAUER and JENS KOENIG

Appeal 2018-006538
Application 14/131,137¹
Technology Center 3700

Before PHILIP J. HOFFMANN, BRUCE T. WIEDER, and
KENNETH G. SCHOPFER, *Administrative Patent Judges*.

WIEDER, *Administrative Patent Judge*.

DECISION ON APPEAL

This is a decision on appeal under 35 U.S.C. § 134 from the Examiner’s final rejection of claims 2–5, 8–10, and 13–19. We have jurisdiction under 35 U.S.C. § 6(b).

We REVERSE.

¹ We use the word “Appellant” to refer to “applicant” as defined in 37 C.F.R. § 1.42. Appellant identifies the real party in interest as Robert Bosch GmbH. (Appeal Br. 2.)

CLAIMED SUBJECT MATTER

Appellant’s “invention relates to a method for generating a through-hole in a wall of a workpiece and a device for carrying out such a method.” (Spec. ¶ 1.²)

Claim 8 is the sole independent claim on appeal. It recites (emphasis and some paragraphing added):

8. A method for generating at least one through-hole (3) in a first wall (9) of a workpiece (2) bounding a hollow space (12) of the workpiece (2), the workpiece having a rear wall (11) bounding the hollow space (12), and the workpiece having an exterior, said method comprising:

introducing a protective agent (13) into the hollow space (12) of the workpiece (2),

the protective agent (13) being a paste; and

thereafter using a laser beam (7) directed onto the first wall (9) from the exterior to form the through-hole (3),

wherein the protective agent (13) remains a paste during laser forming of the through-hole (3),

the protective agent (13) being applied in the hollow space (12) at least partially in an extension (10) of the laser beam (7) guided through the through-hole (3) in front of the rear wall (11) of the workpiece (2), and

wherein the protective agent (13) is formed on the basis of a ceramic powder in an aqueous solution or in a non-aqueous dispersion,

and *wherein pieces of fiberglass are embedded in the protective agent.*

² “Specification” and “Spec.” refer to the “Substitute Specification Clean Copy” filed on January 6, 2014.

REJECTIONS

Claims 2–5, 8–10, and 13–15 are rejected under 35 U.S.C. § 103(a) as unpatentable over Perry (US 6,303,901 B1, iss. Oct. 16, 2001), Geerke (US 7,011,850 B2, iss. Mar. 14, 2006), Brennan (US 4,386,257, iss. May 31, 1983), Knowles (US 6,365,871 B1, iss. Apr. 2, 2002), Vermilion (US 5,601,897, iss. Feb. 11, 1997), and Kessler (US 6,518,499 B1, iss. Feb. 11, 2003).

Claims 16–19 are rejected under 35 U.S.C. § 103(a) as unpatentable over Perry, Geerke, Brennan, Knowles, Vermilion, Kessler, Barker (US 5,876,116, iss. Mar. 2, 1999), and Sugimoto (US 2013/0192745 A1, pub. Aug. 1, 2013).

ANALYSIS

The Examiner finds:

Perry shows the method claimed including a workpiece having a cavity/sack that is introduced with a protective agent such as vacuum grease which is deemed as a non-aqueous solution being a paste, applying a laser beam (10) directed to a first wall of a workpiece to form a through hole (14) wherein the grease is deemed remaining a grease/paste (also see column 4, lines 26-39)[.] But, Perry does not show the protective agent is formed of a ceramic power [sic] in the aqueous or non-aqueous solution with pieces of fiberglass embedded therein.

(Final Action 2.) The Examiner also finds:

Vermilion shows it is known to provide an insulating barrier/layer having silica power [sic] or glass fiber (see column 1, lines 22-24), and Kessler shows it is known to provide an insulating article made of a material including a binder including fiberglass, a glass fiber composite, or other chopped fibers wherein such material is known to exhibit excellent energy absorbance (see column 4, lines 26-38).

(*Id.* at 3.)

Appellant argues that “one of ordinary skill in the art understands that fiberglass is not equivalent to glass fiber. One of ordinary skill in the art understands fiberglass is a composite material made of a plastic reinforced by fine glass fibers.” (Appeal Br. 6.) The Examiner does not disagree. However, the Examiner answers that “Kessler shows that it is known to use fiberglass as well as glass fiber not only for providing a strong and lightweight part but also that exhibits excellent energy absorbance (column 4, lines 25-38).” (Answer 4–5.)

Appellant argues that “Kessler is a nonanalogous reference” (Appeal Br. 8) and, thus, is “improperly used by the Examiner in the rejection” (*id.* at 9).

The analogous-art test requires that the Board show that a reference is either in the field of the applicant’s endeavor or is reasonably pertinent to the problem with which the inventor was concerned in order to rely on that reference as a basis for rejection. *In re Oetiker*, 977 F.2d 1443, 1447 (Fed.Cir.1992). References are selected as being reasonably pertinent to the problem based on the judgment of a person having ordinary skill in the art. *Id.* (“[I]t is necessary to consider ‘the reality of the circumstances,’—in other words, common sense—in deciding in which fields a person of ordinary skill would reasonably be expected to look for a solution to the problem facing the inventor.” (quoting *In re Wood*, 599 F.2d 1032, 1036 (C.C.P.A. 1979))).

In re Kahn, 441 F.3d 977, 986–87 (Fed. Cir. 2006). In short, “[t]he pertinence of the reference as a source of solution to the inventor’s problem must be recognizable with the foresight of a person of ordinary skill, not with the hindsight of the inventor’s successful achievement.” *Scientific Plastic Prods., Inc. v. Biotage AB*, 766 F.3d 1355, 1359 (Fed. Cir. 2014).

“Whether a prior art reference is ‘analogous’ is a question of fact.”
Innovation Toys, LLC v. MGS Entertainment, Inc., 637 F.3d 1314, 1321
(Fed. Cir. 2011).

The “Background of the Invention” section of the Specification discloses that Appellant’s “invention relates to a method for generating a through-hole in a wall of a workpiece and a device for carrying out such a method. The invention particularly relates to the field of manufacturing of nozzle bores, in particular for fuel injection valves.” (Spec. ¶ 1.) Claim 8 recites “[a] method for generating at least one through-hole (3) in a first wall (9) of a workpiece (2) bounding a hollow space (12) of the workpiece (2)” and “using a laser beam (7) directed onto the first wall (9) from the exterior to form the through-hole (3).”

In view of the above, we find that the inventors’ field of endeavor was generating a through-hole in a workpiece using a laser beam.

Kessler is titled “Box Pad For Mounting Electrical Equipment.” (Kessler, col. 1, ll. 1–2.) Kessler discloses an invention that “relates to a box pad for mounting electrical equipment to provide a foundation to support the weight of a transformer or to produce a vault area for electrical or other connections.” (*Id.* at col. 1, ll. 6–9.) Kessler further discloses that “[t]he base, wall and support section [of the box pad] may be made of a binder filled with fiberglass, a glass fiber composite, a glass filled polymer, a thermoplastic, glass fiber composite, or any lightweight material with a specific gravity of less than 1.3.” (*Id.* at col. 4, ll. 26–29.) Kessler further discloses that the described material “has densities that are lower than traditional fiberglass laminates, and exhibits excellent energy absorbance

and aging properties, as well as very good resistance to water, acid, oils, and fuels.” (*Id.* at col. 4, ll. 36–38.)

In short, Kessler relates to a pad for mounting electrical equipment.

Thus, we agree with Appellant that Kessler is not in the field of applicant’s endeavor. (*See* Appeal Br. 8–9.)

But this does not end our inquiry. We must also determine whether Kessler was reasonably pertinent to the problem with which the inventors were concerned based on the judgment of one of ordinary skill in the art. *See In re Kahn*, 441 F.3d at 986–87.

The Specification discloses that “[t]he problem underlying [a] known method is that after penetrating the wall of the workpiece, the laser beam enters into the hollow space and strikes the opposite wall. In so doing, the laser damages the wall opposite the bored hole.” (Spec. ¶ 2.) The Specification further discloses that in the prior art, “to prevent the laser beam from striking the wall opposite the injection orifice, a protective element in the form of a sphere can, for example, be loosely inserted into the blind hole.” (*Id.*) However, this “has the disadvantage that the protective element, which is designed, for example, as a sphere, is gradually penetrated ever deeper by the laser beam” and “is thereby increasingly damaged so that said element has to be regularly replaced.” (*Id.* ¶ 3.)

In view of the above, we determine that the problem with which the inventors were concerned was that of preventing a laser beam from striking and/or damaging the wall opposite the hole bored by the laser beam, or more generally, preventing a laser beam from striking and/or damaging a surface.

The Examiner specifically points out that Kessler discloses that its material “exhibits excellent energy absorbance.” (Final Action 3; *see also*

Answer 5.) However, it is unclear what energy absorbance is being referred to in the relied on passage from Kessler, i.e., does it refer to absorbance of mechanical energy (related to supporting a transformer), absorbance of electrical energy (although one does not typically refer to “absorbance” of electrical energy in this context), or absorbance of some other type of energy? Regardless, Kessler does not refer to a laser or absorbance of energy from a laser.

In view of the above, we determine that the Examiner has not sufficiently explained why one of ordinary skill would reasonably have been expected to look to Kessler for a solution to the problem of preventing a laser beam from striking and/or damaging a surface. Therefore, absent further explanation by the Examiner, we agree with Appellant that Kessler is non-analogous art, and thus, does not qualify as prior art. *See In re Klein*, 647 F.3d 1343, 1352 (Fed. Cir. 2011).

Absent Kessler, the Examiner does not adequately explain why one of ordinary skill in the art would have modified Perry to include a protective agent “wherein pieces of fiberglass are embedded in the protective agent,” as recited in claim 8.

Additionally, we note that when, as in this case, it is necessary “to look to interrelated teachings of multiple patents,” we must “determine whether there was an apparent reason to combine the known elements in the fashion claimed by the patent at issue.” *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 418 (2007). “[T]here must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.” *Id.* (citing *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006)).

Here, the Examiner finds that

the use of the fiberglass in place of or along with other glass fiber/powdered material would provide the necessary function or utility of the subject matter covered by the claims which is to provide an insulation or protection which would include a protection against the laser beam as Kessler shows the binder with fiberglass provides an excellent energy absorbance (column 4, lines 35-37) which is also the characteristic of providing a laser beam protection in Perry that discloses its protective agent to “absorb” photon or a laser radiation/pulse for the protection of the workpiece against the laser (column 4, lines 7-15; column 4, lines 26-33).

(Answer 5.)

Appellant, however, argues that

Kessler never mentions a laser beam and therefore cannot possibly teach that it would be predictable for fiberglass to exhibit excellent energy absorbance to insulate or shield a laser beam, as asserted by the Examiner. One of ordinary skill in the art would understand that just because a material is good at absorbing vibrational energy that does not mean that same material is good at absorbing energy from a laser.

(Appeal Br. 10 (emphasis omitted).)

As discussed above, it is unclear what type of energy absorbance is being referred to in the relied on passage from Kessler. And the Examiner points to no passage in Kessler that refers to a laser beam, or absorbance of such energy. In short, the Examiner has not shown a sufficient rational underpinning to modify Perry in view of Kessler as set forth in claim 8, i.e., to imbed pieces of fiberglass in the protective agent.

DECISION

The Examiner's rejection of claims 2–5, 8–10, and 13–19 under 35 U.S.C. § 103(a) is reversed.

In summary:

Claims Rejected	Basis	Affirmed	Reversed
2–5, 8–10, and 13–15	§ 103(a) in view of Perry, Geerke, Brennan, Knowles, Vermilion, and Kessler		2–5, 8–10, and 13–15
16–19	§ 103(a) in view of Perry, Geerke, Brennan, Knowles, Vermilion, Kessler, Barker, and Sugimoto		16–19
Overall Outcome	§ 103(a)		2–5, 8–10, and 13–19

REVERSED