

The opinion in support of the decision being entered today was not written for publication in a law journal and is not binding precedent of the Board.

UNITED STATES PATENT AND TRADEMARK OFFICE

---

BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

---

Ex parte BRIAN K. FULLER, ALAA A. ELMOURSI  
and KENNETH M. RAHMOELLER

---

Appeal No. 2006-1678  
Application No. 10/677,869

---

ON BRIEF

---

Before KIMLIN, PAK, and WARREN, Administrative Patent Judges.

KIMLIN, Administrative Patent Judge.

DECISION ON APPEAL

This is an appeal from the final rejection of claims 1-4, 6-8, 10-12, and 14-16. The examiner has indicated that claims 5 and 13 would be allowable if rewritten in independent form (see page 2 of Answer, last paragraph). Claim 1 is illustrative:

1. A method for repairing a defect in a kinetically sprayed surface comprising the steps of providing a kinetically sprayed surface having a defect in the surface, said defect caused by said kinetic spraying, applying a repair coating to the defect by thermally spraying a molten material on the defect by a thermal spray process selected from the group consisting of

Appeal No. 2006-1678  
Application No. 10/677,869

a High Velocity Oxy-Fuel combustion thermal spray process, a wire arc thermal spray process, a vacuum plasma thermal spray process, a flame spray thermal process, or a radio frequency plasma thermal spray process thereby, filling the defect and repairing the defect.

The examiner relies upon the following references in the rejections of the appealed claims:

Brogan	20020110682 A1	Aug. 15, 2002
Fuller et al. (Fuller)	6,743,468 B2	Jun. 1, 2004
		(filed Apr. 17, 2003)

Appellants' claimed invention is directed to a method for repairing a defect in a kinetically sprayed surface by applying a repair coating to the defect by thermally spraying a molten material on the defect by a process including a High Velocity Oxy-Fuel combustion thermal spray process.

Appealed claims 1, 2, 4, 6, 7, 10, 11, 14, and 15 stand rejected under 35 U.S.C. § 102(e) as being anticipated by Fuller. Claims 1-4, 6-8, 10-12, and 14-16 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Brogan.<sup>1</sup>

Appellants have not presented separate arguments that are reasonably specific to any particular claim on appeal. Accordingly, the two groups of claims separately rejected by the examiner stand or fall together.

---

<sup>1</sup> The examiner has withdrawn the § 103 rejections based on Fuller (see page 3 of Answer).

Appeal No. 2006-1678  
Application No. 10/677,869

We have thoroughly reviewed each of appellants' arguments for patentability. However, we are in full agreement with the examiner that the claimed subject matter is unpatentable over the cited prior art. Accordingly, we will sustain the examiner's rejections for the reasons set forth in the Answer, which we incorporate herein, and we add the following for emphasis only.

We consider first the examiner's § 102 rejection over Fuller. Appellants disagree with the examiner that the system of Fuller can be used as a High Velocity Oxy-Fuel combustion thermal spray system, and submit an article by Dr. Ronald W. Smith (Exhibit A) to show that the actual equipment and designs used in High Velocity Oxy-Fuel combustion spray processes do not correspond to the system disclosed by Fuller. According to appellants, "[n]one of the system [sic, systems] disclosed in Fuller et al. is capable of carrying out a High Velocity Oxy-Fuel combustion thermal spray process as can be seen from the attached exhibit" (page 11 of principal brief, second paragraph). Appellants maintain that "[t]he recited thermal spray processes in claim 1 cannot be conducted using the system disclosed in Fuller et al." (id.). However, appellants have not refuted the examiner's reasonable comparison of the apparatus

Appeal No. 2006-1678  
Application No. 10/677,869

shown on page 25 of Exhibit A and Figure 2 of Fuller, both of which comprise a combustion chamber, nozzle, and powder injector.

Appellants' Reply Brief makes no mention of the comparison of figures drawn by the examiner, but, rather, contends that element 32 of Fuller is merely an air heater and not a combustion chamber, as set forth by the examiner. Appellants emphasize that element 32 is simply an air heater which has a common purpose inherent to kinetic spray processes of heating the air or other gas, and that "there is no combustion that takes place" (page 3 of Reply Brief, first paragraph). However, as accurately pointed out by the examiner, Fuller expressly discloses that air heater 32 "may include a combustion chamber" (column 7, lines 29-30). Consequently, inasmuch as appellants have not established any structural or functional distinction between the apparatus of Fuller's Figure 2 and apparatus capable of performing High Velocity Oxy-Fuel combustion thermal spray processes within the scope of the appealed claims, the examiner's finding that Fuller describes the claimed invention within the meaning of § 102 stands unrebutted.

Turning to the examiner's § 103 rejection over Brogan, the sole argument advanced by appellants is that "Brogan is not

Appeal No. 2006-1678  
Application No. 10/677,869

disclosing a kinetic spraying process" (page 15 of principal brief, first full paragraph). According to appellants, since Brogan does not disclose a kinetic spraying process, the reference "does not teach, suggest, nor make obvious providing a kinetically sprayed surface with a surface defect therein caused by the kinetic spray process and repair of this defect utilizing a thermal spray process selected from a specific group of thermal spray processes as required by independent claim 1" (id.). However, as explained by the examiner, Brogan defines "his 'thermal spraying' to include kinetic (cold gas dynamic) spraying which sprays particles that are not molten upon application and to also include flame and plasma spraying which would provide molten particles upon application" (page 12 of Answer, last paragraph). As acknowledged by appellants, Brogan specifically teaches that:

In the context of the present invention, the term "thermal spraying" is intended to include spraying of a polymer or polymer particulate with such velocity that its kinetic energy is sufficient to soften/melt the polymer or polymer particulate upon impact with a surface resulting in a coalesced coating of polymer on the surface [paragraph 0030, first sentence].

We agree with the examiner that Brogan teaches that the melting or softening of particles before impact is not required, and paragraphs 0037-0039 indicate that "while it is desired to

thermally spray above  $T_m$  (the softening temperature), it is perfectly possible for the polymer to be deposited at a temperature below  $T_m$ , and then post heated to provide the coalesced coating desired" (page 13 of Answer, first paragraph, last sentence). Hence, we agree with the examiner that the "cold gas dynamic spraying" of Brogan corresponds to the claimed kinetic spraying. Indeed, appellants acknowledge that "[c]old gas dynamic spraying which is equivalent to kinetic spraying always means that there is no thermal softening of the particles being sprayed and that they strike a surface to be coated in the same physical state as they began" (page 14 of principal brief, second paragraph). Also, we concur with the examiner's rationale that:

While Brogan describes the defects as occurring after the coating through wear, it would have been obvious to one of ordinary skill in the art to modify Brogan to repair a conical defect or other defect caused by the kinetic spraying process itself within an expectation of providing a desirably repaired coating, because Brogan teaches to repair a worn down and defective coating in general by recoating where the defects are caused by impact, wear or abrasion processes by remelting and thermally spraying coating that coalesces with the old coating and conical defects or other kinetic spraying defects in the coating . . . [page 14 of Answer, first full sentence].

Appeal No. 2006-1678  
Application No. 10/677,869

As a final point with respect to the § 103 rejection, we note that appellants base no argument upon objective evidence of nonobviousness, such as unexpected results, which would serve to rebut the *prima facie* case of obviousness established by the examiner.

In conclusion, based on the foregoing and the reasons well-stated by the examiner, the examiner's decision rejecting the appealed claims is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a)(1)(iv) (effective Sep. 13, 2004; 69 Fed. Reg. 49960 (Aug. 12, 2004); 1286 Off. Gaz. Pat. Office 21 (Sep. 7, 2004)).

AFFIRMED

EDWARD C. KIMLIN	)
Administrative Patent Judge	)
	)
	)
	)
CHUNG K. PAK	) BOARD OF PATENT
Administrative Patent Judge	) APPEALS AND
	) INTERFERENCES
	)
	)
CHARLES F. WARREN	)
Administrative Patent Judge	)

ECK:clm

Appeal No. 2006-1678  
Application No. 10/677,869

Delphi Technologies, Inc.  
M/C 480-410-202  
P.O. Box 5052  
Troy, MI 48007