

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

Paper No. 29

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte MOHAMED E. LABIB

Appeal No. 2000-1006
Application No. 08/974,148

HEARD: March 20, 2002

Before GARRIS, KRATZ, and POTEATE, ***Administrative Patent Judges.***
POTEATE, ***Administrative Patent Judge.***

This is an appeal under 35 U.S.C. § 134 from the examiner's final rejection of claims 1-8 and 10-12, which are all of the claims remaining in the application. Claim 9 was cancelled in an amendment received October 12, 1998, Paper No. 16.

Claims 1, 4, 6 and 10 are representative of the subject matter on appeal and are reproduced below:

1. A method of cleaning solid surfaces to remove adherent water insoluble organic materials that do not ionize in water therefrom comprising

a) treating said solid surfaces with an aqueous solution consisting essentially of

i) an oxidant in an amount sufficient to convert the water insoluble organic materials to an ionized form having a positive or negative charge, which charge is the same charge as that of the solid surfaces;

ii) a pH adjusting agent in an amount sufficient to provide a pH greater than the isoelectric point of said solid surfaces for acid-type water insoluble organic materials, and¹ a pH less than the isoelectric point for basic-type water insoluble organic materials but in an amount insufficient to cause damage to said solid surfaces.

4. A method according to claim 1 wherein the pH adjustment agent is hydrogen chloride.

6. A method according to claim 1 wherein the aqueous solution further includes a surfactant.

10. A method according to claim 6 wherein the aqueous solution further includes a defoaming agent.

The prior art relied upon by the examiner is:

Dell et al. (Dell)	3,293,148	Dec. 20, 1966
Wilkins et al. (Wilkins)	5,215,675	June 1, 1993
Jackson	5,269,850	Dec. 14, 1993
Sugihara et al. (Sugihara)	5,302,311	Apr. 12, 1994

¹It appears that the word "and" should be "or." Should appellant elect to continue prosecution in this case, it is recommended that claim 1 be amended to make this correction.

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GROUND OF REJECTION

Claim 12 was rejected under 35 U.S.C. § 112, first paragraph, in the Final Rejection mailed April 8, 1999, Paper No. 19. This rejection was overcome by an amendment under 37 CFR § 1.116, received June 7, 1999, Paper No. 20. Appeal Brief, page 2. The claims currently stand rejected as follows:

I. Claims 1-3, 11 and 12 stand rejected under 35 U.S.C. § 103 as unpatentable over Jackson;

II. Claims 4 and 5 stand rejected under 35 U.S.C. § 103 as unpatentable over Jackson and further in view of Sugihara;

III. Claims 6-8² stand rejected under 35 U.S.C. § 103 as unpatentable over Jackson and further in view of Wilkins; and

²The stated rejection as it appears in both the Final Rejection and Appeal Brief does not include claim 7 (claim 7 depends from claim 6). However, the Final Rejection and Examiner's Answer both indicate that claims 1-8, inclusive, stand rejected under 35 U.S.C. § 103. Moreover, the Appeal Brief states that "[c]laims 1-8 and 10-12 will be considered together and discussed together in this appeal." Further, we find no evidence of record that the examiner indicated, or that appellant understood that claim 7 was allowed, withdrawn from consideration, or otherwise cancelled. Accordingly, we conclude that the examiner inadvertently omitted claim 7 from the statement of rejection and that appellant has not been harmed by this oversight.

IV. Claim 10 stands rejected under 35 U.S.C. § 103 as unpatentable over Jackson in view of Wilkins and further in view of Dell.

We affirm as to all four grounds of rejection.

BACKGROUND

It is known in the art to utilize organic solvents for removing organic residues from inorganic surfaces. Specification, page 1, lines 8-11. In processes which utilize organic solvents, an organic residue is contacted with a quantity of organic solvent until all of the residue has dissolved. *Id.* at lines 14-16. Organic residues may result from, e.g., the processing of organic chemicals, pharmaceuticals and foodstuffs which adhere to surfaces such as metal, ceramic, glass or polymers. *Id.* at lines 8-11 and 17-19. In recent years, environmental considerations have made the use of organic solvents less desirable and economically feasible. *Id.*, page 1, line 23 - page 2, line 10. Thus, there has been an effort to develop water-based cleaning solutions for removal of organic residues. *See id.*, page 2, lines 16-19. While certain organic materials are water soluble and, therefore, removable with water-

based solutions, most organic materials are insoluble in water and cannot be removed by simply washing them in water. *Id.* at lines 11-15.

According to appellant, the present invention provides a method of cleaning solid surfaces to remove adherent water insoluble organic materials that do not ionize in water using a water-based cleaning solution. Specification, page 2, lines 21-25; claim 1. The aqueous cleaning solution consists essentially of an oxidant and a pH adjusting agent. The oxidant is added in an amount sufficient to convert the water insoluble organic materials to an ionized form having a charge which is the same charge as that of the solid surface. Claim 1. According to appellant, this causes the organic residue to be repelled from the surface being cleaned. Specification, page 5, lines 1-5. The pH adjusting agent is added in an amount sufficient to provide a pH either greater than or less than the isoelectric point ("IEP") of the solid surface, depending on whether the insoluble organic material is an acid type, or a basic type, respectively. Claim 1. The reason for this is explained in the Specification as follows:

The pH level of the cleaning solution must be such that the electrostatic charge sign of the surface to be cleaned remains the same during cleaning. The dissociation of surface hydroxides on the substrate in an aqueous solution takes place at the isoelectric point, when the surface has zero charge.

Page 6, lines 4-9.

DISCUSSION

The initial burden of presenting a **prima facie** case of obviousness rests on the examiner. **In re Oetiker**, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992). In determining whether an invention is obvious, the examiner must consider:

- (1) the scope and content of the prior art;
- (2) the differences between the prior art and the claimed invention;
- (3) the level of ordinary skill in the art; and
- (4) any objective considerations of nonobviousness that may be present.

Graham v. John Deere Co., 383 U.S. 1, 17-18, 148 USPQ 459, 466-67 (1966).

I. Claims 1-3, 11 and 12

The examiner maintains that claims 1-3, 11 and 12 are unpatentable over Jackson for the following reasons:

Jackson disclose[s] (see col. 1 line 20 through col. 4 line 61) a method of cleaning solid surfaces by removing adherent water insoluble organic contaminants substantially as claimed. The claims differ from Jackson by reciting that the oxidant and pH adjusting agent are in specific amounts. It is submitted that the amounts of hydrogen peroxide and alkaline material added in Jackson are considered patentably indistinguishable from those used in the instant method. It is further submitted that the amounts of hydrogen peroxide added in Jackson would appear to convert at least some of the organic contaminants to an ionized form as in the instant method. It would have been obvious to one skilled in the art to modify the method of Jackson by utilizing the recited amounts of oxidant and pH adjustment agent, to aid in cleaning the solid surfaces. The specific pH, temperature, and hydrogen peroxide concentration utilized, would have been an obvious matter of process optimization to one skilled in the art, depending on the specific surface treated and results desired, absent a sufficient showing of unexpected results.

Final Rejection, Paper No. 19, mailed April 8, 1999, pages 2-3, paragraph 3.

Appellant argues that Jackson is directed to removing solder flux which is not a "water-insoluble organic material" as

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defined by appellant. Appeal Brief, Paper No. 24, received September 2, 1999, pages 4-5. As correctly observed by the examiner, Jackson indicates that his composition is effective for removing not only rosins and other flux materials, but also organic compounds such as oil, grease, lubricants, plasticizers, etc. Jackson, column 4, lines 34-44. One of ordinary skill in the art would have reasonably understood such materials as including "water-insoluble organic materials" as found by the examiner. Also, Jackson suggests the removal of "water-insoluble" organic materials by referring to the removed contaminants as "suspended material". **See** Jackson, column 3, lines 34-35; column 4, lines 26-30. **See also**, column 1, line 46 - column 2, line 6 (alluding to the fact that aqueous cleaners are typically not effective as electronic component defluxing solvents and that there is a need for a solvent which removes organic flux residues and other organic materials without creating a negative environmental impact).

Appellant further argues, essentially, that appellant's system for removing insoluble organic materials is performed by a

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different mechanism than that which is utilized by Jackson.³
Specifically, appellant distinguishes the present invention from
that of Jackson as follows:

Jackson uses a high pH solution of at least 10.5, and he states that the rosin reacts with the alkali to form a water soluble soap. Applicant is removing insoluble organic materials that do not react with either alkali or acid to form soluble products. Instead, applicant, using hydrogen peroxide, ionizes such inorganic [sic, organic] materials to [sic] as to give them a charge, either positive or negative depending on the nature of the surface. When the organic material and the surface it is adhered to have the same charge, they repel each other, loosening the bonds between them and allowing the organic material to be removed.

Appeal Brief, page 6.

In deciding patentability issues under 35 U.S.C. § 103, "[a]nalysis begins with a key legal question -- what is the invention claimed?" *Panduit Corp. v. Dennison*, 810 F.2d 1561, 1567-68, 1 USPQ2d 1593, 1597 (Fed. Cir.), *cert. denied*, 481 U.S. 1052 (1987). Again, as correctly observed by the examiner, claim 1 merely requires that the oxidant is present in an amount

³"Jackson has no understanding of the **role played** by IEP versus pH, or even of the **role** of pH versus IEP of the surface. Nor does Jackson teach the **role** for hydrogen peroxide required by and taught by applicant." Appeal Brief, page 7 (emphasis added).

sufficient to convert the water insoluble organic material to an ionized form but does not "exclude the formation of water soluble reaction products after treating the surface with the aqueous solution." Examiner's Answer, page 4. Moreover, Jackson teaches that the formation of soaps "is probably due to **ionization** of flux acids by basic solutions." Jackson, column 3, lines 45-47 (emphasis added). Although Jackson does not specifically state that the organic materials are converted to an ionized form having a charge which is the same charge as that of the solid surface, Jackson does disclose the removal of flux acids from substrates which may comprise a metal such as aluminum (**see id.** at lines 2-3; column 4, lines 45-54; Example 2) which has an isoelectric point of 9.0 (**see** Specification, page 4) at a pH of at least 10.5 (Jackson, column 3, lines 47-50).

Thus, Jackson teaches a method of cleaning a solid surface to remove insoluble organic materials by treating the solid surface with an oxidant in an amount sufficient to convert the water insoluble organic material to an ionized form having a charge which is the same as that of the solid surface, a pH adjusting agent being added in an amount sufficient to provide a pH greater than the isoelectric point of the solid surface for an

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acid type water insoluble organic material. Accordingly, we find that the examiner has established a **prima facie** case of obviousness with respect to claims 1-3, 11 and 12.

We recognize that a **prima facie** case of obviousness may be rebutted if the appellant (1) establishes unexpected properties in the claimed composition, or (2) shows that the art, in any material respect, teaches away from the claimed invention. **In re Malagari**, 499 F.2d 1297, 1303, 182 USPQ 549, 553 (CCPA 1974). Appellant urges that Jackson "teaches away from the use of any pH below about 10.5." Appeal Brief, page 7. This argument fails to overcome the examiner's **prima facie** showing of obviousness since the claims are not limited to pH values below about 10.5. In fact, claim 12 (which depends from claim 1) expressly requires "a high pH up to 10.5." Accordingly, the rejection of claims 1-3, 11 and 12 is affirmed.

II. Claims 4-5

Appellant concedes that Sugihara discloses a cleaning solution of ammonia and hydrogen peroxide as recited in appealed claims 4-5, but maintains that "the reference does not disclose or suggest the method of the present invention at all." Appeal

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Brief, page 8. In particular, appellant notes that Sugihara does not appreciate the role of IEP versus pH of the surface to be cleaned. **Id.** Appellant's arguments are unpersuasive in attempting to overcome the obviousness rejection of claims 4 and 5 by attacking the combined teachings of the Sugihara and Jackson references as if applied individually. **See In re Young**, 403 F.2d 754, 757, 159 USPQ 725, 728 (CCPA 1968).

The examiner relies on Sugihara for a teaching that it is known to utilize ammonium hydroxide and hydrogen chloride to aid in cleaning substrates. According to the examiner,

[i]t would have been obvious to one skilled in the art having the references before him, to modify the method of Jackson by utilizing the recited pH adjustment agents in view of the teachings of Sugihara et al., to aid in removing contaminants from the solid surfaces, absent a sufficient showing of unexpected results.

Examiner's Answer, page 6. Appellant has failed to present arguments traversing the examiner's proposed combination.

See In re Lintner, 458 F.2d 1013, 1016, 173 USPQ 560, 562 (CCPA 1972) (As long as some motivation or suggestion to combine the references is provided in the prior art, there is no requirement that the references be combined for the reasons contemplated by the inventor). Accordingly, the rejection of claims 4 and 5 is affirmed.

III. Claims 6-8

The examiner relies on Wilkins for a teaching that "it is known in the art to utilize non-ionic, cationic and anionic surfactants in cleaning solutions containing peroxide to aid in removing insoluble organic materials from solid surfaces." Examiner's Answer, page 6. According to the examiner, one of ordinary skill in the art would have found it obvious to modify the method of Jackson by including surfactants (i.e., to remove insoluble organic materials from the surfaces) as recited in appealed claim 6 (and also required by claims 7 and 8 which depend therefrom). **Id.** Appellant argues that Wilkins does not adjust pH in his method and, essentially, that it would not have been obvious to have chosen a surfactant from amongst the list of other additives disclosed in Wilkins to achieve the claimed invention. **See** Appeal Brief, page 8. We disagree. The appellant's nonobviousness position is vitiated by the fact that Jackson specifically discloses that a wetting agent may be used in the composition of the invention, which wetting agent may be an anionic surfactant. **See** column 3, line 55 - column 4, line 4. **See, supra,**

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Lintner. See also, *In re Wesslau*, 353 F.2d 238, 241, 147 USPQ 391, 393 (CCPA 1965) (A reference should be considered in its entirety for what it fairly suggests to one of ordinary skill in the art.) Thus, Jackson alone teaches, or at least would have suggested, use of a surfactant as required by the claims under consideration. Accordingly, the rejection of claims 6-8 is affirmed.

IV. Claim 10

Appellant argues that Jackson teaches away from the use of a defoaming agent (recited in appealed claim 10) in view of Jackson's disclosure that bubble formation is desirable because it imparts a scrubbing action to a cleaning solution. Appeal Brief, page 9. As correctly observed by the examiner, bubble formation is not excluded from the claims on appeal. See, *In re Zletz*, 893 F.2d 319, 321, 13 USPQ2d 1320, 1322 (Fed. Cir. 1989). The examiner relies on Dell as disclosing that it is known in the art to utilize anti-foaming agents for prevention of excess foaming created during the application of cleaning solutions. Examiner's Answer, page 6. While appellant is correct that

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Jackson does teach that "[t]he scrubbing foam enhances the cleaning activity of the solvent" (Jackson, column 3, lines 24-25), Jackson also teaches that "excessive foaming" is undesirable (Jackson, column 3, lines 55-66). Accordingly, we agree that the proposed combination renders claim 10 obvious and the rejection is affirmed.

TIME PERIOD FOR RESPONSE

No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a).

AFFIRMED

BRADLEY R. GARRIS)	
Administrative Patent Judge)	
)	
)	BOARD OF
)	PATENT APPEALS
PETER F. KRATZ)	AND
Administrative Patent Judge)	INTERFERENCES
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LINDA R. POTEATE)	
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