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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte BRUCE PHILIP GREEN¹

Appeal 2016-007870
Application 14/165,076
Technology Center 1600

Before ULRIKE W. JENKS, ROBERT A. POLLOCK, and
DEVON ZASTROW NEWMAN, *Administrative Patent Judges*.

NEWMAN, *Administrative Patent Judge*.

DECISION ON APPEAL

This appeal under 35 U.S.C. § 134 involves claims to a two-part sterilant wipe system. The Examiner entered final rejections for obviousness. We have jurisdiction under 35 U.S.C. § 6(b).

We AFFIRM.

STATEMENT OF THE CASE

Background

Two-part sterilising solutions are used in applications where the active sterilising ingredient is unstable over time. The solution is therefore prepared *in situ* shortly before it is to be used. A

¹ Appellant identifies the real party in interest as Tristel, PLC. App. Br. 2.

particularly important sterilising agent is chlorine dioxide, which may be formed from mixtures of various reagents including: chlorite and acid; chlorate, peroxide and acid; and chlorite, hypochlorite, and a suitable buffer. Chlorine dioxide has excellent sterilising and bactericidal properties, and oral ingestion in man and animals has been shown to be relatively safe.

Spec. 1:20–29.

The Specification discloses “a two-part sterilant system, notably to a system for producing chlorine dioxide (ClO₂).” *Id.* at 1:13–14.

The Claims

Claims 1–25 are on appeal. Claim 1 is illustrative and reads as follows:

1. A two-part sterilant wipe system comprising:
 - (a) a trigger-operated foam dispenser containing a first part comprising a first reagent in a carrier medium and a foam promoter; and
 - (b) at least one fabric wipe containing an aqueous fluid in a sealed container, the at least one fabric wipe containing a second part which is miscible with the first part and which comprises a second reagent in a carrier medium;
 - wherein the first reagent and the second reagent react, when mixed, to provide a sterilising composition;
 - wherein the first part is a fluid and is contained in the trigger-operated foam dispenser and is constructed for dispensing from the trigger-operated foam dispenser as a foam;
 - wherein the second part is absorbed or impregnated in the at least one fabric wipe containing an aqueous fluid in a sealed container.

App. Br. 17 (Claims App. 2).

The Issues

The following rejections are before us to review:

Claim 1, 2, 5–13, and 16–25 are rejected under 35 U.S.C. § 103(a) as obvious over Hutchings,² Kross,³ Focaracci,⁴ Shastry,⁵ Julius,⁶ and Alliger.⁷ Ans. 2.

Claims 3 and 4 are rejected under 35 U.S.C. § 103(a) as obvious over Hutchings, Kross, Focaracci, Shastry, Julius, Alliger, and Morelli.⁸ *Id.* at 6.

Claims 14 and 15 are rejected under 35 U.S.C. § 103(a) as obvious over Hutchings, Kross, Focaracci, Shastry, Julius, Alliger, and Green.⁹ *Id.* at 7.

I

The Examiner finds that Hutchings teaches “a chlorine dioxide generating system wherein the device is a two-part system comprising an aqueous reservoir containing sodium chlorite and a pad containing an acid or some other reactive agent which will react with the chlorite to form chlorine dioxide.” Ans. 2. The Examiner finds Hutchings teaches using organic acids, such as citric acid, to react with the chlorite and surfactants, such as Triton X-100, in amounts of between 0–3 percent by weight, to assist in wetting the liquid. *Id.* The Examiner finds Hutchings discloses an

² U.S. 5,091,107, issued Feb. 25, 1992 (“Hutchings”).

³ U.S. 4,891,216, issued Jan. 2, 1990 (“Kross”).

⁴ U.S. 4,646,973, issued Mar. 3, 1987 (“Focaracci”).

⁵ U.S. 2005/0210615 A1, published Sep. 29, 2005 (“Shastry”).

⁶ U.S. 5,647,506, issued Jul. 15, 1997 (“Julius”).

⁷ U.S. 4,330,531, issued May 18, 1982 (“Alliger”).

⁸ U.S. 2003/0180247 A1, published Sep. 25, 2003 (“Morelli”).

⁹ WO 96/10916, published April 18, 1996 (“Green”).

embodiment that delivers aqueous sodium chlorite by pump “to a pad or fabric member containing an acid.” *Id.*

The Examiner finds Kross discloses “a disinfecting composition which comprises two gels adapted to be simultaneously mixed in situ wherein the first gel component comprises an aqueous solution containing a protic acid like lactic acid and second component comprising an amount of a metal chlorite such as sodium chlorite.” *Id.* at 3. The Examiner finds Kross teaches combining the two components to obtain chlorine dioxide, which is useful as a disinfectant for application to human or animal skin. *Id.* The Examiner further finds Kross teaches including “short chain alcohols like isopropyl alcohol and polyols including glycerin, ethylene glycol and/or propylene glycol . . . [as] dictated by product aesthetics and preferred physical form” and that the resulting composition would have a pH of less than 7. *Id.* at 3–4.

The Examiner finds Focaracci is directed to an “impingement foamer for producing a thick foam spray of cleaning fluids” which is desirable because “foams are preferable for cleaning mixtures because dispensed foam does not bounce off surfaces, rather the foam adheres to the target surface and does not dribble out from the spout.” *Id.* at 4.

The Examiner finds Shastry teaches a two part composition for oral care or hygiene comprising “an a) oral care agent such as a peroxy compound or a chlorite . . . and b) an absorbent fabric having impregnated therein an acceptable preconditioning agent wherein the preconditioning agent is an activating agent for the oral care agent such as an acidifying agent.” *Id.* The Examiner finds Shastry teaches sealing its moist or dry fabric in sealed multiple or individual packages. *Id.*

The Examiner finds Julius teaches a “readily openable pop-up dispenser for moist tissues [that] aids in keeping the plurality of tissues moist [and] that the moist tissues are to be interleaved to facilitate pop-up dispensing.” *Id.* at 4–5.

The Examiner finds Alliger discloses “applicators for dispensing germ killing compositions [that] include a first container comprising sodium chlorite and a second container containing an acidic component.” *Id.* at 5. The Examiner finds Alliger teaches “a trigger-operated dispenser” for delivering reagents and “a means for acidifying sodium chlorite to produce chlorine dioxide within a gel.” *Id.* The Examiner finds Alliger discloses a gel is useful because it “retains the gas for longer periods of time, thereby enhancing the amount of time in which the gas is in contact with the skin,” including when used with a bandage. *Id.*

The Examiner concludes that it would have been obvious to the skilled artisan to have used “the chlorine dioxide producing system of Hutching[s] and apply the resultant chlorine dioxide releasing pad onto the skin to provide antimicrobial benefit as is taught by Kross” and that the artisan would have been “motivated to use a polyol such as glycerin and ethylene glycol in a similar amount as isopropyl alcohol with a reasonable expectation for success in providing a carrier medium.” *Id.* at 3.

The Examiner further concludes that using a trigger mechanism as taught in Focaracci is “common knowledge in the art and any ordinary person would readily envisage its use in place of a pump dispenser.” *Id.* at 4. The Examiner concludes that the ordinary artisan would have recognized that “providing the em[a]nator pads of Hutchings in individual sachets or in a resealable container would be [obvious and] beneficial because [] doing so

reduces exposure of the active agents in the fabric member to loss of activity/efficacy by reacting with moisture and reactants present in air.” *Id.* at 4.

The Examiner concludes that the ordinary artisan would have found it obvious to have modified the teachings of the combined references

with a reasonable expectation for success in arriving at a two-part sterilant system wherein the first part is capable of being delivered as a foam to a second part via trigger-type mechanism (see Focaracci) wherein the second part, the fabric member, is present in a sealed container (see Shastry and Julius) wherein when the first and second part are mixed chlorine dioxide is produced and the pad can be applied to the skin for disinfection benefit (see Kross).

Id. at 5. The Examiner further concludes that the artisan “would have envisaged modifying the use of Hutchings in view of Kross which teaches a chlorine dioxide producing composition which is directly applied to skin for disinfecting benefit” and further included polyols as taught by Kross for humectant properties. *Id.* at 5–6.

The issue with respect to this rejection is: Does the evidence of record support the Examiner’s conclusion that Hutchings, Kross, Focaracci, Shastry, Julius, and Alliger suggest the claimed sterilant system?

Findings of Fact (FF)

1. Hutchings discloses

methods and devices for the production of controlled quantities of chlorine dioxide at concentrations which are effective to function as a deodorant or a germicide. Aqueous chlorite compositions such as aqueous sodium chlorite are brought into contact at a controlled rate through capillary means, e.g. a wick with an absorbent pad containing acid or other reactant which will react with the chlorite and form chlorine dioxide.

Hutchings Abstract.

2. Hutchings discloses that an aqueous solution of sodium chlorite contacts the absorbent pad, at which point

the sodium chlorite dissolved in the water will react with the acid to produce and evolve chlorine dioxide. As the acid at the center point is fully reacted and more aqueous sodium chlorite reaches the pad 9 from the wick 4, the reaction zone will expand radially outward from the center producing more chlorine dioxide until the reaction zone reaches the periphery of the pad 9 and the reaction stops. The water in the aqueous solution which reaches the pad evaporates concurrently with the evolution of the chlorine dioxide and assists in distributing the oxidizing agent throughout the area to be treated.

Id. at 3:44–59.

3. Hutchings discloses an embodiment of its claimed system as Figure 3:

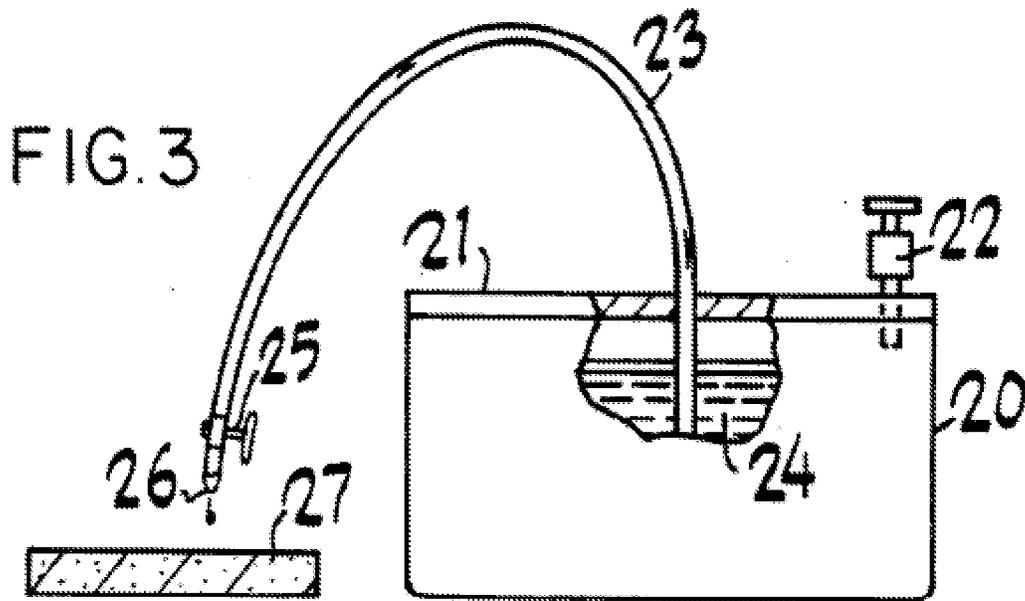


Figure 3 is a “side view” of an embodiment of the claimed system in which:

the container 20 has an air-tight cover 21 and a finger-operated air pump 22. A thin tube 23 extends through cover 21 and into

the sodium chlorite liquid **24** in container **20**. The tube, at its opposite end, has a valve **25** and an exit orifice **26**. The emanator pad **27** is positioned beneath the orifice **26** so that it receives drops from the tube **23**. In operation, the user will raise the air pressure in container **20** by pumping the air pump **22**. He will then open the valve **25** permitting the dilute aqueous solution of sodium chlorite to drip slowly on the pad **27**, which contains a molar excess of a solid and, as described above in connection with pad **9**. The system of FIG. **3** is shut off by closing the valve **25**.

Id. at 3:1, 4:48–61.

4. Hutchings discloses inorganic and organic acids, including citric acid, for use on the emanator pad. *Id.* at 6:23–25. The absorbent pad contains 1–2% by weight of the acid (preferred range), and “will contain a molar excess of the selected reactant.” *Id.* at 6:40–45.

5. Kross discloses:

a composition for forming a protective barrier while disinfecting substrates such as human or animal skin [comprising] two gels adapted to be simultaneously applied and mixed in situ and to adhere onto the substrate. The first gel comprises an aqueous solution containing suitable amounts of a protic acid, preferably lactic acid. The second gel comprises an amount of a metal chlorite such as sodium chlorite, such that the chlorite ion concentration in the form of chlorous acid in the combined gels is no more than about 15% by weight of the total amount of chlorite ion concentration. The second gel also contains a polysulfonic acid salt. . . . In another aspect, there is disclosed a method for treating skin diseases. This method comprises applying to the skin an effective amount of the above-noted composition.

Kross Abstract.

6. Kross discloses:

All alcohols, particularly the monohydric alcohols, may be used as ingredients with the polymer. Alcohols (C1-C24) which are non-irritating to the skin, such as methanol, ethanol,

isopropanol, propyl, lauryl, myristyl, cetyl, and stearyl, as well as mixtures thereof, are preferred. Polyols such as glycerine, or ethylene glycol or propylene glycol may be utilized advantageously with the polymer. The choice of the alcohol to be utilized with the particular polymer of the composition of the present invention will ordinarily be dictated by product aesthetics and physical form of the composition. For instance, when liquid compositions are desired, the lower alcohols are preferably utilized, while cream compositions within the scope of the present invention will normally require the higher alcohols.

Id. at 5:53–67.

7. Focaracci discloses “an interrupter” process and apparatus “for producing a thick foam from a spray of liquid and air.” Focaracci Abstract. The interrupter “precisely control[s] the amount of peripheral flow impinged upon by the interrupter in the stream periphery.” *Id.* An embodiment of the mechanism includes a “trigger or lever **11**, when depressed in the direction of the arrow, [that] opens a common valving mechanism **13** to release a continuous flow of **60** liquid under pressure from the tube to the atomizing aperture of the apparatus.” *Id.* at 3:57–62.

8. Focaracci discloses that using a mixture of liquid and air particular in the form of a foam is “one way to eliminate liquid dribbling and ‘bounce back’ from the target surface . . . Liquid dispensed in aerated foam form has been found to adhere better to a target surface and to reduce the tendency for bounce.” *Id.* at 1:40–45.

9. Shastry discloses:

A method for improving effectiveness of an oral care agent comprises preconditioning an oral surface by wiping the surface with an absorbent fabric having impregnated therein or coated thereon an orally acceptable preconditioning agent such as an activating agent for the oral care agent, wherein the wiping

transfers an activating effective amount of the preconditioning agent from the fabric to the oral surface, and thereafter applying a composition comprising the oral care agent to the oral surface.

Shastry Abstract. The oral care agent can comprise “as a whitening agent at least one peroxy compound, optionally together with one or more additional whitening agents such as chlorine dioxide, chlorites and hypochlorites.” *Id.* ¶ 68.

10. Shastry discloses that “[w]hether moist or dry, the towelette or wipe can be supplied in a sealed multiple or individual package, for example a plastic or foil wrapper, which is removed before use.” *Id.* ¶ 38.

11. Julius discloses a “resealable dispenser for dispensing a plurality of interleaved, individual moisture-impregnated articles, such as moist tissues.” Julius Abstract. “The interleaving of the moist tissue allows a second, interleaved tissue to cling to the first tissue, primarily through frictional forces, as the first tissue is withdrawn from the dispenser. This second tissue is then frictionally retained in orifice **22**. *Id.* at 6:7–11.

12. Alliger discloses a “germ-killing gel, a germ-killing soap, a germ-killing toothpaste and applicators for dispensing germ-killing compositions. These compositions include a first material containing sodium chlorite and a second material containing lactic acid in sufficient amount to lower the pH of the aqueous media to less than about seven.” Alliger Abstract.

13. Alliger discloses a “process of acidifying solution chlorite to produce chlorine dioxide within the gel.” *Id.* at 1:49–50. “The high viscosity of these gels and their bioadhesion to the skin prevents escape of the gas and also holds the gas in contact with the skin for long periods, particularly in conjunction with the use of” adhesive bandages. *Id.* at 1:43–47.

14. Alliger discloses a trigger-operated dispenser embodiment in Figure 6, shown below:

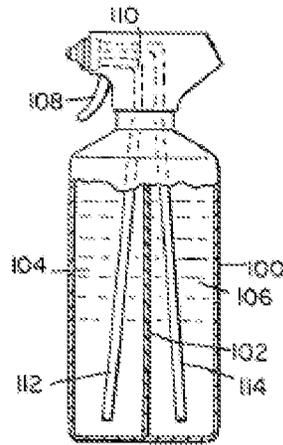


FIG. 6

Figure 6 is “a sectional detail view of a trigger-type dual dispenser.” *Id.* at 2:24–25.

Principles of Law

An invention is not patentable under 35 U.S.C. § 103 if it is obvious. *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 427 (2007). Under § 103: the scope and content of the prior art are to be determined; differences between the prior art and the claims at issue are to be ascertained; and the level of ordinary skill in the pertinent art resolved. Against this background, the obviousness or nonobviousness of the subject matter is determined.

Graham v. John Deere Co., 383 U.S. 1, 17 (1966). A central question in analyzing obviousness is “whether the improvement is more than the predictable use of prior art elements according to their established functions.” *KSR*, 550 U.S. 417.

Analysis

We adopt the Examiner's findings of fact and reasoning regarding the scope and content of the prior art (Ans. 2–6, 9–12; FF 1–14) and agree that the claims are rendered obvious by the combination of Hutchings, Kross, Focaracci, Shastry, Julius, and Alliger.

Hutchings discloses a two-part system for generating chlorine dioxide from sodium chlorite and an acid, such as the claimed acids, at concentrations sufficient to function as a germicide. FF1–2, FF4. Hutchings discloses an embodiment in Figure 3 in which the wick transmits the liquid to the pad, permitting the release of the sodium chlorite. FF3. Hutchings does not teach a trigger-operated foam dispenser for dispensing chlorine dioxide onto an emanating pad for use on the skin, a fabric member provided in a sealed sachet or interleaved in a resealable container, dispensing of the compound as a gel, or specific ranges of certain components. However, Kross discloses an aqueous composition of two gels comprising a protic acid and a metal chlorite, and including a monohydric alcohol, used for treating the skin. FF5–6. Focaracci discloses a mechanism for dispensing foam and teaches that use of foam is advantageous for adherence. FF7–8. Shastry discloses that a wipe made of absorbent fabric can be used to treat a surface prior to application of a second compound that includes a peroxy with one or more chlorite compounds. FF9. Shastry further teaches individual packaging of wipes. FF10. Julius teaches that jointly packaged wipes can be interleaved for dispensing and stored in a dispenser to preserve moisture content. FF11. Alliger discloses compositions including gels comprising

sodium chlorite and lactic acid, a process of acidification to produce chlorine dioxide in the gel, and a trigger-operated dispenser embodiment. FF 12–14.

We agree with the Examiner that a skilled artisan would have understood the advantages taught by Shastry in using a fabric wipe rather than a wick, and would have been motivated to incorporate those teachings to create a system using a wipe, including individually packaged wipes. Ans. 4; FF9–10. We further agree with the Examiner that the skilled artisan would have learned from Julius, that interleaving wipes for sequential dispensing from a resealable container provided ease in dispensing. Ans. 4–5, FF11. We further agree with the Examiner that the skilled artisan would have had reason to combine the components used in Hutchings with the features of Kross, Alliger, and Focaracci to create the composition in gel form, and to house the composition in a container using a trigger-operated dispenser or foam dispenser. Ans. 2–6; FF1–8; 12–14. Specifically, the advantages taught by Kross and Alliger regarding gels made from similar or identical components for the purpose of disinfectant solutions would have motivated the skilled artisan to combine the components into a gel form because “[i]t is *prima facie* obvious to combine two compositions each of which is taught by the prior art to be useful for the same purpose, in order to form a third composition which is to be used for the very same purpose.” *In re Kerkhoven*, 626 F.2d 846, 850 (CCPA 1980). We conclude the combined teachings of the references as a whole would have suggested the claimed invention to the ordinarily skilled artisan. *In re Keller*, 642 F.2d 413, 425 (CCPA 1981) (The test for obviousness is what the combined teachings of

the references, as a whole would have suggested to those of ordinary skill in the art). *KSR*, 550 U.S. at 416.

We have considered Appellant’s arguments but do not find them persuasive.

Appellant argues that the rejection should be reversed because the “Examiner fails to provide a sufficient motivational statement and/or sufficient evidentiary basis as required in a Section 103 rejection [,] the combination of references teach away from one another,” and the references would not have suggested “a two-part sterilant wipe system according to claims 1–19, or a two-part wound-dressing system according to claims 20–25 of the above-identified patent application.” App. Br. 10–11.

Appellant argues that modifying Hutchings to add a wipe containing an aqueous fluid “would go against the teachings by Hutchings of generating gaseous chlorine dioxide to deodorize or disinfect a room [because] replacing the dry emanator pad taught by Hutchings with a wipe containing an aqueous fluid would delay the evolution of chlorine dioxide gas.” *Id.* at 12. Appellant argues Hutchings’ “dry emanator pad ‘is absorbent and has a capillary action’” while the skilled artisan “would understand that the capillary action of a wipe containing an aqueous fluid would be significantly less than the capillary action of the dry emanator pad taught by Hutchings” and “render the device taught by Hutchings unsatisfactory for generating gaseous chlorine dioxide.” *Id.* at 12–13. *See also* Reply Br. 2–3.

We are not persuaded. The claims do not recite any time frame for the mixing of the first and second reagent to provide the sterilizing composition. *See In re Self*, 671 F.2d 1344, 1348 (CCPA 1982) (“[A]ppellant’s arguments fail from the outset because . . . they are not based

on limitations appearing in the claims.”). Further, Appellant has provided no persuasive evidence or argument to explain why a wipe made of fabric, as suggested, could not be used with the system of Hutchings, particularly in light of Figure 3, cited by the Examiner, which drips aqueous fluid onto the pad of Hutchings, and thus does not rely on capillary action. FF3. In this regard, we are similarly unpersuaded by Appellant’s arguments that modification of the emanator pad “so that it no longer contains dry acid but instead contains ‘an aqueous fluid in a sealed container’ . . . would achieve the result required by Hutchings.” App. Br. 18–19.

We are further not persuaded by Appellant’s arguments that “it would not have been obvious to modify Hutchings to achieve the present invention because the present invention, as a whole, would not have been obvious from Hutchings.” App. Br. 13. In advancing this argument, Appellant discusses individual distinctions of Hutchings with respect to the claimed invention (see *id.* at 13–16), but does not persuasively address the combination of the respective teachings of all references in the rejection. *See also Keller*, 642 F.2d at 426 (one cannot show nonobviousness by attacking references individually where the Examiner bases the rejection on a combination of references). For the same reason, we are unpersuaded by Appellant’s arguments that Kross does not teach use of its composition “formed on a fabric wipe and used as a sterilant wipe or as a wound-dressing.” App. Br. 17. As cited by the Examiner, (Ans. 4–5), Shastry and Julius teach use of fabric such as wipes for transfer of treatment solutions. FF9–11.

As discussed above, Hutchings, Kross, Shastry, and Alliger each teach solutions that “react, when mixed, to provide a sterilizing composition.”

FF1–2, 5–6, 9–10, 13–14. Moreover, with respect to the claim limitation “wherein the first reagent and the second reagent react, when mixed, to provide a sterilising composition,” we find that the Examiner has sufficiently established that the claimed compositions and the compositions rendered obvious by the prior art are “substantially identical” such that the burden is properly shifted to Appellant to show that the prior art composition(s) would not “necessarily or inherently possess the characteristics of [the] claimed product,” i.e., mixing to produce a composition suitable for sterilizing (claim 1). *In re Best*, 562 F.2d 1252, 1255 (CCPA 1977) (citation omitted). We are thus not persuaded that the Examiner had the burden to “explain why . . . the resulting emanator pad of Hutchings, once application of aqueous sodium chlorite solution has stopped, would be sufficient to deliver liquid chlorine dioxide to a surface when Hutching clearly teaches that the chlorine dioxide is supposed to evaporate from the emanator pad.” App. Br. 19. The claim requires only that a sterilizing composition be made upon mixing. *In re Self*, 671 F.2d at 1348. Appellant has not provided evidence or persuasively argued why this function is impossible, particularly in light of the disclosures in Figure 3 of Hutchings, as discussed above. Moreover,

[W]here the Patent Office has reason to believe that a functional limitation asserted to be critical for establishing novelty in the claimed subject matter may, in fact, be an inherent characteristic of the prior art, it possesses the authority to require the applicant to prove that the subject matter shown to be in the prior art does not possess the characteristic relied on.

In re Schreiber, 128 F.3d 1473, 1478 (Fed. Cir. 1997); *In re Best*, 562 F.2d at 1254–55.

“Attorney’s argument in a brief cannot take the place of evidence.” *In re Pearson*, 494 F.2d 1399, 1405 (CCPA 1974). Appellant’s contention that Hutching’s system could not function as the Examiner suggests and, thus, cannot meet the functional language is unsubstantiated attorney argument. *See, e.g.*, App. Br. 19–24 (arguing removal of Hutchings’ emanator pad would turn off device, that device cannot be used as a wipe because it is directed at releasing chlorine dioxide to the atmosphere, that device not controllable if a pressured spraying device is used, and keeping chlorine dioxide in gel form would be disadvantageous).

Finally, Appellant argues that the Examiner has failed to provide sufficient explanation for “why” and “how” the skilled artisan would have made the various modifications proposed to reach the claimed sterilant system. *See, e.g.*, App. Br. 24 (Examiner “fails to explain why [skilled artisan desiring to improve] Hutchings for the purpose of deodorizing or disinfecting a room using gaseous chlorine dioxide, would look to a disclosure by Shastry et al. of an oral care system, and the outstanding Office Action fails to explain how one having ordinary skill in the art would actually combine the two disclosures.”). We do not find these arguments persuasive, as the Examiner has set forth reasonable, fact-based conclusions supporting the combination, as discussed above. *See* FF 1–14. In addition, our reviewing court has held that improvement-related factors may implicitly motivate a combination:

[A]n implicit motivation to combine exists not only when a suggestion may be gleaned from the prior art **as a whole**, but when the “improvement” is technology-independent and the

combination of references results in a product or process that is more desirable, for example because it is stronger, cheaper, cleaner, faster, lighter, smaller, more durable, or more efficient. Because the desire to enhance commercial opportunities by improving a product or process is universal—and even common-sensical—. . . there exists in these situations a motivation to combine prior art references even absent any hint of suggestion in the references themselves. In such situations, the proper question is whether the ordinary artisan possesses knowledge and skills rendering him *capable* of combining the prior art references.

DyStar Textilfarben GmbH & Co. Deutschland KG v. C.H. Patrick Co., 464 F.3d 1356, 1368 (Fed. Cir. 2006) (bold emphasis added).

Conclusion of Law

We affirm the rejection of claim 1 over Hutchings, Kross, Focaracci, Shastry, Julius, and Alliger. Claims 2, 5–13, and 16–25 have not been argued separately and therefore fall with claim 1. 37 C.F.R. § 41.37(c)(1)(iv).

II

Issue

The Examiner has rejected claims 3 and 4 as obvious over Hutchings, Kross, Focaracci, Shastry, Julius, Alliger, and Morelli. Ans. at 6. The Examiner concludes that the references in the primary rejection do not teach the sterilant system comprising a colorimetric indicator that changes color when the two parts are mixed together wherein the first and second parts have a different pH and the indicator reagent changes color in response to a change in pH upon mixing. *Id.*

The Examiner finds Morelli teaches “a two-part disinfecting system which comprises a first part and a second part adapted to be mixed to yield

an aqueous disinfecting solution, wherein the first part comprises a chlorite and the second part comprises an acid and an optional oxidizable colorant.”

Id. The Examiner finds Morelli teaches the colorant may change “upon contact with the first part,” which is attributable to “a change in pH going from the pH of the second part to the pH of the resulting composition” that occurs “upon contact with chlorine dioxide at concentrations generally encountered in acidified chlorite disinfectants.” *Id.* at 6–7.

The Examiner concludes that because the “color change is indicative of antimicrobial activity due to chlorine dioxide generation,” the skilled artisan would have been motivated to include this color indicator with the modified Hutchings system “as a visual indication as to the effectiveness of the sterilant on the wipe.” *Id.* at 7.

The issue with respect to this rejection is: Does the evidence of record support the Examiner’s conclusion that Hutchings, Kross, Focaracci, Shastry, Julius, Alliger, and Morelli suggest the sterilant system of claims 3 and 4?

Findings of Fact

15. Morelli discloses:

A two-part disinfecting system[], as well as disinfecting compositions and methods for making and using the same. The two-part disinfecting system contains a first part and a second part adapted to be mixed to yield an aqueous disinfecting composition, wherein the first part comprises a chlorite and the second part comprises an acid and an optional oxidizable colorant, and wherein the first part, the second part, or both the first and second parts comprise an alpha olefin sulfonate.

Morelli Abstract.

16. Morelli discloses:

. . . the amount of acid in the second part may be characterized by the pH of the disinfecting composition. In this regard, the acid is present in the second part in an amount such that, when combined with the first part, the pH of the disinfecting composition is below 5, generally from 2 to 5, and typically from 2.3 to 3.5.

The optional oxidizable colorant of the second part is a colorant that undergoes color loss upon contact with chlorine dioxide at concentrations generally encountered in acidified chlorite disinfectants.

Id. ¶¶ 28, 29.

Analysis

We adopt the Examiner's findings of fact and reasoning regarding the scope and content of the prior art (Ans. 6–7, 12–13; FF15–16) and agree that the claims are rendered obvious by the combination of Hutchings, Kross, Focaracci, Shastry, Julius, Alliger, and Morelli. We address the Appellant's arguments below.

First, Appellant argues the Examiner failed to explain the basis of the rejection based on Julius. App. Br. 26.

The Examiner responds that “Julius was **inadvertently** left out of statement of rejection over claims 1, 2, 5-13 and 16-25 but was discussed on page 9, paragraph 18” and that the statement has been corrected. Ans. 13. We agree that the Examiner's basis for rejection over Julius is addressed in the Answer.

Appellant next reiterates several arguments made with regard to the suggested modifications to the Hutchings reference. App. Br. 26–28. For the reasons discussed above, we are not persuaded by these arguments.

Appellant also argues that the Examiner, with regard to the suggested modification based on Morelli to include an oxidizable colorant, “fails to

explain why one would add a color change to the device of Hutchings” and argues that “[b]ecause the device of Hutchings can be ‘turned off’ once the delivery of aqueous sodium chlorite solution is stopped, it is submitted that there is no need for a color change system as taught by Morelli et al.” and hence, no motivation to combine exists. *Id.* at 28–29.

We are not persuaded. As discussed above, an implicit motivation to combine can exist for a product absent a direct suggestion in the references and because the combination of references provides a product that is more desirable. *DyStar*, 464 F.3d at 1368. Because the Examiner’s reasoning is fact-based and Appellant has not shown why the combination cannot be made, we affirm the rejection of claims 3 and 4 under 35 U.S.C. § 103(a) as obvious over Hutchings, Kross, Focaracci, Shastry, Julius, Alliger, and Morelli.

III

Issue

The Examiner has rejected claims 14 and 15 as obvious over Hutchings, Kross, Focaracci, Shastry, Julius, Alliger, and Green.¹⁰ Ans. 7. The Examiner concludes that the references in the primary rejection do not “teach the first and the second reagent comprising a chlorite and the other comprise a hypochlorite (or a peroxide).” *Id.*

The Examiner finds Green teaches a two-part sterilant system used for comprising “a) a first part comprising sodium chlorite solution and b) a second part comprising an organic acid and a corrosion inhibitor.” *Id.* at 7–8. The Examiner finds Green teaches “citric, sorbic and boric acids” and

¹⁰ WO 96/10916, published April 18, 1996 (“Green”).

that combinations of such “are preferred as the sorbic and boric acids are not only activators but also bactericides and that their implementation leads to a higher ‘kill’ than when using citric acid alone.” *Id.* at 8. The Examiner finds Green teaches a preferred pH of “from 4.5 to 6.5” of the system, that “more neutral pH is advantageous for skin compatibility,” and that “hypochlorites and peroxides,” which “are useful for their oxidizing antimicrobial properties” can be included with the system. *Id.*

The Examiner concludes the skilled artisan would have found it obvious to further modify the modified Hutchings system “to provide a hypochlorite (or peroxide) in order to impart greater antimicrobial benefit to the composition.” *Id.* The Examiner further finds addition of a hypochlorite “would create a strong acid (i.e. hypochlorous acid) capable of reacting with sodium chlorite to form chlorine dioxide, the disinfectant,” which would further benefit the system by resulting in “chloride dioxide evolution [thus] introducing a secondary antimicrobial active.” *Id.* at 8–9.

The issue with respect to this rejection is: Does the evidence of record support the Examiner’s conclusion that Hutchings, Kross, Focaracci, Shastry, Julius, Alliger, and Green suggest the sterilant system of claims 14 and 15?

Findings of Fact

17. Green discloses:

A sterilant-disinfectant solution which may be used in the cleaning of metallic objects, particularly medical instruments. . . . The solution includes a triazole or other component for inhibiting the corrosion of copper and brass. Phosphates or other buffering agents adjust the solution pH in order to prevent the corrosion of steel. Molybdates or analogous compounds

may be used to buffer the pH and have been found to inhibit the corrosion of aluminum by oxidizing agents.

Green, Abstract.

18. Green discloses:

Citric acid is a preferred acid for use in activation. Combinations of suitable acids may be used, e.g. a combination of sorbic, boric and citric acid. Such a combination is preferred as the sorbic and boric acid act not only as activators but also as bactericides in their own right. A higher “kill” is found than if using citric acid alone or in combination with, for example, lactic acid.

Id. at 5:18–25.

19. Green discloses that the “preferred pH of the sterilizing system is 4.5–6.5.” *Id.* at 9:8.

20. Green discloses that “[t]he oxidizing anti-microbial agent can be selected from the class consisting of ozone, peracetic acid, organic peroxides, hydrogen peroxides, inorganic peroxides, and other oxygen releasing compounds, chlorine, chlorine dioxide, active chlorine releasing compounds such as chloramines, hypochlorites and phenol.”

Id. at 7:1–6.

Analysis

We adopt the Examiner’s findings of fact and reasoning regarding the scope and content of the prior art (Ans. 7–9, 14; FF 17–20) and agree that the claims are rendered obvious by the combination of Hutchings, Kross, Focaracci, Shastry, Julius, Alliger, and Morelli. We address Appellant’s arguments below.

Appellant argues the Examiner “has failed to specifically show where Green describes *one of the first reagent and the second reagent comprises*

*chlorite and the other comprises hypochlorite, which is specifically recited in claim 14 [and] has failed to show one of the first reagent and the second reagent comprises chlorate and the other comprises a peroxide and an acid, as specifically recited in claim 15.” App. Br. 30. Appellant further argues the Examiner “failed to articulate why one of skill in the art would desire the specific combination of chlorite/hypochlorite or chlorate/peroxide and an acid in a two-part sterilant wipe system.” *Id.* at 31.*

The Examiner responds:

Green is drawn to a two-part sterilant system comprising a first part having a chlorite solution and b) a second part comprising an organic acid and a corrosion inhibitor. Green additionally states that hypochlorites and peroxides can be included for additional oxidizing anti-microbial properties which one of ordinary skill[] would have envisaged to use in either the chlorite reservoir or the pad. First, it’s noted that chlorites/chlorates are related oxoacids, ClO_2^{2-} and ClO_3^{3-} , and exhibit identical reactivity towards acids, e.g. produce ClO_2 . Thus, the two species are interchangeable and any person of skill in the art would have a reasonable expectation for success in using one or the other to produce ClO_2 . Second, as hypochlorites and peroxides are taught to broaden the antimicrobial activity of the composition upon mixing, any ordinarily skilled person would have desired to include them in the composition resulting from the cited combination.

Ans. 14.

We agree with the Examiner’s reasoning, to which Appellant does not respond in the Reply Brief. With regard to Appellant’s general argument that “the cited references teach away,” which is not discussed at length, we are not persuaded. A teaching away requires a reference to actually criticize, discredit, or otherwise discourage the claimed solution. *See In re Fulton*, 391 F.3d 1195, 1201 (Fed. Cir. 2004) (“The prior art’s mere disclosure of

more than one alternative does not constitute a teaching away from any of these alternatives because such disclosure does not criticize, discredit, or otherwise discourage the solution claimed”). Appellant does not identify, and we do not find, any teaching in any of the cited prior art that criticizes, discredits, or discourages the use of any of the individual teachings as cited by the Examiner, or discourages combining the references to create the claimed two-part sterilant system employing the recited peroxide and hypochlorite components. Accordingly, we affirm the rejection.

SUMMARY

We affirm the rejection of claims 1, 2, 5–13, and 16–25 under 35 U.S.C. § 103(a) as obvious over Hutchings, Kross, Focaracci, Shastry, Julius, and Alliger.

We affirm the rejection of claims 3 and 4 are rejected under 35 U.S.C. § 103(a) as obvious over Hutchings, Kross, Focaracci, Shastry, Julius, Alliger, and Morelli.

We affirm the rejection of claims 14 and 15 are rejected under 35 U.S.C. § 103(a) as obvious over Hutchings, Kross, Focaracci, Shastry, Julius, Alliger, and Green.

TIME PERIOD FOR RESPONSE

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

AFFIRMED