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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
90/008,869	10/05/2007	6886553	68803(302728?)	1108
24504	7590	01/13/2012	EXAMINER	
THOMAS, KAYDEN, HORSTEMEYER & RISLEY, LLP			WILLIAMS, CATHERINE SERKE	
400 INTERSTATE NORTH PARKWAY SE				
SUITE 1500			ART UNIT	PAPER NUMBER
ATLANTA, GA 30339			3993	
			MAIL DATE	DELIVERY MODE
			01/13/2012	PAPER

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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte HEATMAX, INC.
Patent Owner and Appellant

Appeal 2012-002361
Reexamination Control 90/008,869
Patent 6,886,553 B2
Technology Center 3900

Before ROMULO H. DELMENDO, JEFFREY B. ROBERTSON, and
JOSIAH C. COCKS, *Administrative Patent Judges*.

DELMENDO, *Administrative Patent Judge*.

DECISION ON APPEAL

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Heatmax, Inc., the owner of United States Patent 6,886,553 B2 (hereinafter the “’553 Patent¹”), appeals under 35 U.S.C. §§ 134(b) and 306 from a final rejection of claims 1-4, 8-16, 18, and 19.² We have jurisdiction under 35 U.S.C. §§ 134(b) and 306.

We AFFIRM-IN-PART and REVERSE-IN-PART.

STATEMENT OF THE CASE

The current reexamination was ordered based on a Request for *Ex Parte* Reexamination filed by William L. Brooks of Edwards, Angell, Palmer and Dodge, LLP on October 5, 2007 (Order Granting Request for *Ex Parte* Reexamination mailed December 10, 2007).

The ’553 Patent states that the invention relates to a self-contained personal warming apparatus (col. 1, ll. 6-8).

Claim 1 on appeal reads as follows:

1. A self-contained, disposable, single-use heat generating apparatus, comprising:
 - a heat generating pack comprising:
 - a first bag layer having a first surface area;
 - a second bag layer having a second surface area, said second bag layer being fixed to said first bag layer, such that said first bag layer and said second bag layer [defining]define a pouch therebetween;
 - a heat generating agent disposed in said pouch, said heat generating agent arranged and configured to consume air at a

¹ The ’553 Patent issued to Daniel H. Yim on May 3, 2005 based on Application 10/405,668 filed on April 1, 2003.

² See Appeal Brief filed on February 15, 2011, hereinafter “App. Br.,” 2; Final Office Action mailed October 15, 2010.

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predetermined air consumption rate in an exothermic reaction; and

at least one of said first surface area and said second surface area comprises an air permeable surface area having a predetermined airflow rate at which air is introduced to said heat generating agent, said predetermined airflow rate being arranged and configured to be less than said predetermined air consumption rate such that said heat generating agent remains substantially evenly distributed within said pouch, wherein one of said first surface area and said second surface area comprises an air permeable surface area and the other of said first surface area and said second surface area comprises an air impermeable surface area, wherein said air impermeable surface area comprises a low coefficient of friction.

(App. Br., Claims App'x. A1.)

The Examiner relied upon the following as evidence of unpatentability (Examiner's Answer mailed March 25, 2011, hereinafter "Ans.," 3, 5, 7-11, 13):

Yates	5,928,275	July 27, 1999
Koiso	JP 58-92752	June 2, 1983
Ohbiki	JP 5-30432	Aug. 4, 1993
Tsuji	JP 7-90030	Oct. 4, 1995

The Patent Owner relied upon the following as evidence of non-obviousness:

Declaration of Uma Ramachandran filed on May 19, 2008 (hereinafter "Ramachandran Declaration" or "Ramachandran Decl.").

The Examiner rejected the claims as follows:

- I. Claims 1-3, 8-10, 14-16, 18, and 19 under 35 U.S.C. § 102(b) as anticipated by Tsuji (Ans. 5-7);

- II. Claims 1-4, 10, 14, and 18 under 35 U.S.C.
§ 102(b) as anticipated by Ohbiki (Ans. 7-8);
- III. Claims 1-3, 8-12, 14-16, and 18 under 35 U.S.C.
§ 102(b) as anticipated by Koiso (Ans. 8-9);
- IV. Claims 1-3, 8-10, 12, 14-16, 18, and 19 under 35
U.S.C. § 103(a) as unpatentable over Tsuji (Ans.
9);
- V. Claims 1-4, 10, 12, 14, and 18 under 35 U.S.C.
§ 103(a) as unpatentable over Ohbiki (Ans. 10);
- VI. Claims 1-3, 8-12, 14-16, and 18 under 35 U.S.C.
§ 103(a) as unpatentable over Koiso (Ans. 10-11);³
- VII. Claim 4 under 35 U.S.C. § 103(a) as unpatentable
over Tsuji or Koiso in view of Ohbiki (Ans. 11);
- VIII. Claim 13 under 35 U.S.C. § 103(a) as unpatentable
over Tsuji, Ohbiki, or Koiso, each in view of Yates
(Ans. 11-13); and
- IX. Claims 11, 15, and 16 under 35 U.S.C. § 103(a) as
unpatentable over Koiso in view of Tsuji (Ans.
13).⁴

³ The Examiner also refers to United States Patent 5,187,814 to Gold issued on February 23, 1993 (Ans. 3, 10). Gold, however, was not included in any of the statements of the rejections. Accordingly, we do not consider it as part of the evidence supporting the Examiner's rejections. *In re Hoch*, 428 F.2d 1341, 1342 n.3 (CCPA 1970) ("Where a reference is relied on to support a rejection, whether or not in a 'minor capacity,' there would appear to be no excuse for not positively including the reference in the statement of rejection.").

REJECTIONS BASED ON TSUJI AS A PRINCIPAL REFERENCE
ISSUES

The Examiner asserted that the limitation “surface area comprises a low coefficient of friction” (claim 1) is interpreted to mean that “the surface materials and structure are configured such that one can easily slide the [heat generating] pack into a pocket” (Ans. 4). According to the Examiner, Tsuji’s rayon non-woven fabric “(3) has an agreeable feeling in the case of using it as a packet warmer” and “the rayon non-woven fabric will have a low coefficient of friction since it is disclosed in Tsuji to be inserted into a pocket during use and the figures show the surface area as being smooth” (Ans. 6). Alternatively, the Examiner asserted that a person of ordinary skill in the art would have found it obvious to incorporate “any low coefficient of friction material including a low coefficient of friction polyethylene or a low coefficient of friction polypropylene into any one of the devices of Tsuji, Ohbiki and Koiso *as a simple substitution of one material for another*” (Ans. 10; emphasis added).

The Patent Owner contends that the Examiner has not demonstrated that Tsuji anticipates the disputed claim limitation because: (i) the mere fact that Tusji’s rayon non-woven fabric has an “agreeable feeling” when used as a packet warmer “does not correspond to providing an air impermeable surface area that comprises a low coefficient of friction”; and (ii) “[m]erely exhibiting a smooth surface or texture . . . does not ensure that the surface

⁴ In our opinion below, our citations to Koiso, Ohbiki, and Tsuji are to the English language translations found in the record.

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exhibits a low coefficient of friction such as to allow an object to easily slide into a pocket” (App. Br. 7-8; *see also* App. Br. 8-10). Specifically, the Patent Owner argues that surface smoothness alone would not necessarily result in a surface with “a low coefficient of friction” relative to the pocket because “[t]he coefficient of friction depends on the materials used and results from the contact between two surfaces” (Reply Br. 2, filed May 25, 2011; App. Br. 8). Regarding obviousness, the Patent Owner contends that the Examiner failed to articulate a reason why a person of ordinary skill in the art would have combined the prior art references in the manner claimed (App. Br. 17-18).

Thus, the dispositive issues arising from these contentions are:

- (1) Did the Examiner demonstrate that a surface area of Tsuji’s rayon non-woven fabric would necessarily comprise “a low coefficient of friction,” as recited in the independent claims (e.g., claim 1)?
- (2) Did the Examiner articulate sufficient reasoning with some rational underpinning to support a conclusion that a person of ordinary skill in the art would have used polyethylene or polypropylene in Tsuji in order to arrive at a device encompassed by the appealed claims?

FINDINGS OF FACT (“FF”)

1. Figure 3 of the ’553 Patent is reproduced below:

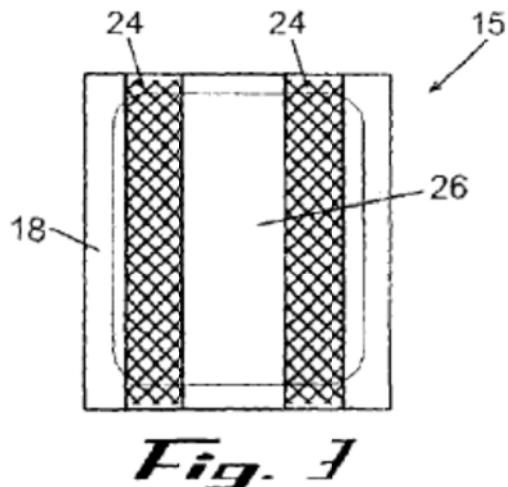
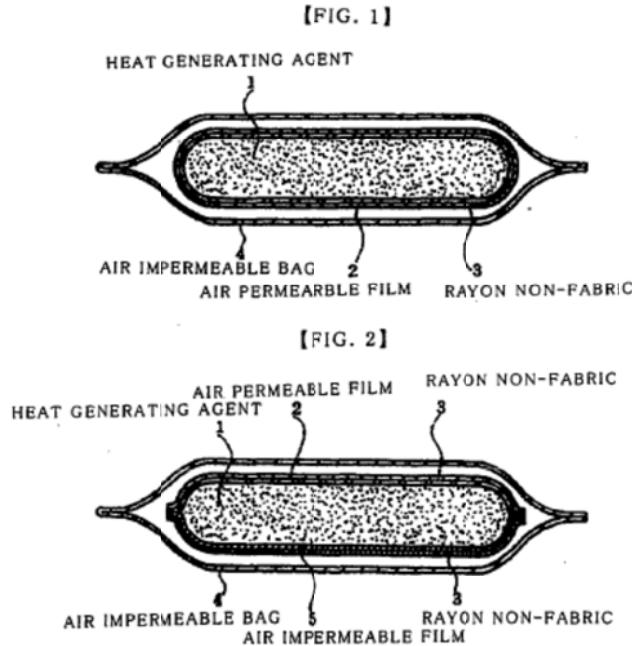


Figure 3 above depicts a plan view of a bag layer 15 of the claimed warming apparatus, in which the bag layer comprises an air permeable surface area 24 and an air impermeable surface area 26 (col. 2, ll. 47-48; col. 4, ll. 33-36).

2. In the “DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS” section, the ’553 Patent specifically identifies polyethylene or polypropylene as exemplary materials suitable for use as impermeable surface area 26, as follows:
“The air impermeable surface area 26 of the bag layer 15 can comprise polyethylene, polypropylene, or any suitable material”
(col. 2, ll. 52-53; col. 4, ll. 46-48).
3. The ’553 Patent defines the term “low coefficient of friction” as follows: “It is preferable that the air impermeable surface area 26 exhibits a low coefficient of friction, such as to allow the heat generating pack . . . to easily slide into a pocket (not

shown) formed in a glove, sock, belt for holding heat generating packs in position, or the like" (col. 4, ll. 48-52).

4. Tsuji discloses "a warming apparatus which assures a proper supply amount of oxygen to a heat generating agent, and thereby maintains a caloric value per time properly and further elongates a duration time and furthermore has a good shape retaining property and a good wearing property during wearing use thereof" (pp. 2-3).
5. Tsuji's Figures 1 and 2 are reproduced below:



Tsuji's Figures 1 and 2 above depict sectional views of the disclosed warming apparatus including heat generating agent 1, air permeable film 2, rayon non-woven fabric 3, air impermeable bag 4, and air impermeable film 5 (pp. 6-7).

6. Tsuji teaches that “[t]he rayon non-woven fabric 3 is used for assuring an agreeable feeling and an appropriate heat insulation property in the case of using as a pocket warmer” (p. 4).

PRINCIPLES OF LAW

“During reexamination, as with original examination, the PTO must give claims their broadest reasonable construction consistent with the specification Therefore, we look to the specification to see if it provides a definition for claim terms, but otherwise apply a broad interpretation.” *In re ICON Health and Fitness, Inc.*, 496 F.3d 1374, 1379 (Fed. Cir. 2007). Nevertheless, “this interpretation must be consistent with the one that those skilled in the art would reach.” *In re Cortright*, 165 F.3d 1353, 1358 (Fed. Cir. 1999). *See also In re Baker Hughes, Inc.*, 215 F.3d 1297, 1303 (Fed. Cir. 2000) (explaining that interpretation of claim language must be “reasonable in light of the totality of the written description.”).

Inherency of a characteristic attributed to a claimed device may not be established by mere possibilities or probabilities. *See, e.g., In re Oelrich*, 666 F.2d 578, 581 (CCPA 1981).

ANALYSIS

We begin our analysis with claim construction of the disputed claim limitation “low coefficient of friction” (claim 1). The ’553 Patent Specification informs one skilled in the relevant art that the characteristic “low coefficient of friction” attributed to the air impermeable surface area allows the heat generating pack “to easily slide into a pocket . . . formed in a glove, sock, belt for holding heat generating packs in position, or the like”

(FF 1, 3). While the limitation is arguably broad, the '553 Patent discloses, as part of the “DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS,” polyethylene and polypropylene as suitable air impermeable surface area materials (FF 2). Thus, we construe the phrase “low coefficient of friction” to mean a degree of friction that would approximate (or not significantly deviate from) the coefficient of friction that would be present when air impermeable materials such as polyethylene or polypropylene are placed in contact with materials commonly used to form pockets.

Having construed the disputed claim limitation, we turn to the Examiner’s anticipation rejection. The Examiner relied on Tsuji’s disclosure that the rayon non-woven fabric 3 has an “agreeable feeling in the case of using it as a pocket warmer” and that the surface topography of the rayon non-woven fabric 3 appears to be smooth (Ans. 6; FF 4-6). These findings, however, are insufficient to demonstrate that Tsuji’s rayon non-woven fabric 3 would inherently or necessarily have a “low coefficient of friction,” as that term would be understood by one skilled in the relevant art. In this case, the Examiner failed to identify sufficient evidence establishing that coefficient of friction depends solely on an “agreeable feeling” and/or surface smoothness. To the contrary, it would reasonably appear that one of ordinary skill in the art would have understood that other factors such as the materials of construction of the contacting surfaces may also affect the coefficient of friction.

Because the Examiner's inherency theory is based on mere possibilities or probabilities, we cannot uphold any of the rejections that rely on Tsuji as inherently disclosing the disputed claim limitation.

With respect to obviousness, we agree with the Patent Owner that the Examiner's rejection is not well founded. While the Examiner argues that the use of "a low coefficient of friction polyethylene or a low coefficient of friction polypropylene" in Tsuji is a matter of "simple substitution of one material for another" (Ans. 10), the Examiner failed to articulate a reason with some rational underpinning as to why a person of ordinary skill in the art would have substituted non-woven rayon with polyethylene or polypropylene. Here, the Examiner failed to make the requisite factual findings necessary to show that polyethylene or polypropylene would be interchangeable with a non-woven rayon for Tsuji's purposes (FF 6).

Therefore, we cannot affirm the Examiner's obviousness rejections.

REJECTIONS BASED ON OHBIKI AS A PRINCIPAL REFERENCE

ISSUES

The Examiner asserted that "[w]hile the surface area materials [of Ohbiki's apparatus] are not disclosed[,] these materials are considered to have a low coefficient of friction since they are used in the construction of the film for the pack as shown in figures 1 through 5 and as shown these surfaces make a smooth surface area that can easily be slid into a pocket of a user" (Ans. 7-8). Alternatively, the Examiner asserted that a person of ordinary skill in the art would have found it obvious to incorporate "any low coefficient of friction material including a low coefficient of friction

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polyethylene or a low coefficient of friction polypropylene into any one of the devices of Tsuji, Ohbiki and Koiso *as a simple substitution of one material for another*" (Ans. 10; emphasis added).

The Patent Owner contends that the Examiner erred because the smooth surface area of Ohbiki's apparatus does not support an inference that the air-impermeable surface area material has a low coefficient of friction (App. Br. 11). Regarding obviousness, the Patent Owner contends that the Examiner failed to articulate a reason why a person of ordinary skill in the art would have combined the prior art references in the manner claimed (App. Br. 17-18).

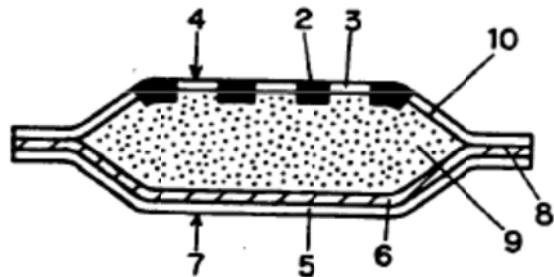
Thus, the dispositive issues are:

(3) Did the Examiner demonstrate that a surface area of Ohbiki's apparatus comprises a "low coefficient of friction" as recited in the appealed claims?

(4) Did the Examiner articulate sufficient reasoning with some rational underpinning to support a conclusion that a person of ordinary skill in the art would have used polyethylene or polypropylene in Ohbiki in order to arrive at a device encompassed by the appealed claims?

ADDITIONAL FINDING OF FACT

7. Ohbiki's Figure 1 is reproduced below:



Ohbiki's Figure 1 above depicts a containment bag for a heat generating agent including a non-thermally fused portion of a porous film 2, a thermally fused portion of a porous film 3, a porous film wrapping material 4, a non-woven fabric 5, an air-impermeable film 6, an air-impermeable wrapping material 7, a heat sealed portion 8, a heat generating agent 9, and a through hole 10 (p.18).

ANALYSIS

The Examiner's rejections based on Ohbiki as a principal reference fare no better than the rejections based on Tsuji. Again, the Examiner has relied on the surface topography as shown in Ohbiki's drawings to account for the "low coefficient of friction" limitation (FF 7). However, the Examiner has not identified sufficient evidence establishing that a person of ordinary skill in the art would have understood that coefficient of friction depends solely on surface smoothness.

With respect to obviousness, we agree with the Patent Owner that the Examiner failed to establish a prima facie case of obviousness. While the

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Examiner argues that the use of “a low coefficient of friction polyethylene or a low coefficient of friction polypropylene” in Ohbiki is a matter of “simple substitution of one material for another” (Ans. 10), the Examiner failed to articulate a reason with some rational underpinning as to why a person of ordinary skill in the art would have considered Ohbiki’s materials to be interchangeable with polyethylene or polypropylene in the context of the functions and/or purposes disclosed in Ohbiki.

Therefore, we cannot affirm these rejections.

REJECTIONS BASED ON KOISO AS A PRINCIPAL REFERENCE

ISSUE

The Examiner found that Koiso describes every limitation of claims 1-3, 8-12, 14-16, and 18 (Ans. 8-9). Specifically, the Examiner found that Koiso necessarily discloses an air-impermeable surface area with a low coefficient of friction because the reference discloses a smooth film made of polyethylene or polypropylene – the same materials disclosed as suitable in the ’553 Patent (Ans. 9, 16-17).

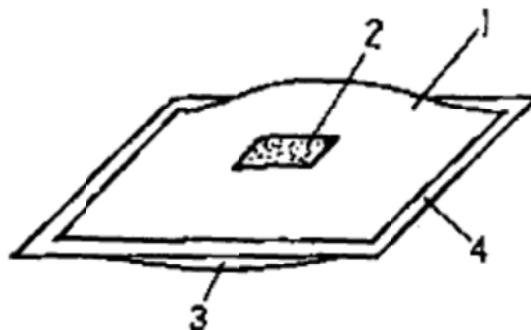
The Patent Owner argues that “[o]ne of ordinary skill in the art will appreciate that the use of such polymers as polyethylene and polypropylene does not automatically correspond with providing a low coefficient of friction material as the coefficient of friction of these polymers depends on many various parameters such as, for example, the selected film density and concentration of surface lubricant associated with these polymers” (App. Br. 14). In support, the Patent Owner relies on the testimony found in the Ramachandran Declaration.

Thus, the dispositive issue is:

- (5) Did the Examiner err in finding that Koiso's film made of polyethylene or polypropylene would reasonably appear to possess a "low coefficient of friction"?

ADDITIONAL FINDINGS OF FACT

8. Koiso describes an exothermic body including a bag that houses an exothermic composition, which generates heat when contacted with oxygen in the air (p. 1).
9. Koiso's Figure 1 is reproduced below:



Koiso's Figure 1 above depicts an exothermic body, wherein the body includes air impermeable films 1 and 3, which are bonded together at their peripheral edges 4, and microscopic pore film 2 that forms an air permeable portion (pp. 5-6).

10. Koiso discloses, inter alia, polyethylene or polypropylene as suitable materials for the air impermeable film (p. 4; Ramachandran Decl., ¶ 5).

11. The '553 Patent criticizes pouches having a self-adhesive layer that “can not be easily inserted into pockets formed in socks, gloves, mittens, specially designed belts, or the like for use” (col. 1, ll. 50-53).
12. Uma Ramachandran is an employee of the Patent Owner (Ramachandran Decl., ¶¶ 1).
13. Ramachandran states (Ramachandran Decl., ¶ 6):

The *Koiso* reference fails to disclose providing a low coefficient of friction material. The use of such polymers as polyethylene and polypropylene does not automatically correspond with providing a low coefficient of friction material as the coefficient of friction of these polymers depends on such parameters as the selected film density and concentration of surface lubricant associated with these polymers. The *Koiso* reference fails to address these parameters.
14. Ramachandran does not include any experimental tests or technical explanations or reasoning supporting the assertions made in the Declaration.
15. Ramachandran fails to identify any *specific* polyethylene or polypropylene that would not have “a low coefficient of friction.” (Ramachandran Decl., ¶ 6)
16. Ramachandran does not testify that Koiso’s product was manufactured with a typical polyethylene or polypropylene surface and found to lack the characteristic of being easily slid able into a pocket.

PRINCIPLES OF LAW

In *In re Best*, 562 F.2d 1252, 1255 (CCPA 1977), a predecessor of our reviewing court explained (internal citations and footnotes omitted; italics added):

Where, as here, the claimed and prior art products are identical or substantially identical, or are produced by identical or substantially identical processes, the PTO can require an applicant to prove that the prior art products do not necessarily or inherently possess the characteristics of his claimed product . . . Whether the rejection is based on ‘inherency’ under 35 USC 102, on ‘prima facie obviousness’ under 35 USC 103, jointly or alternatively, the burden of proof is the same, *and its fairness is evidenced by the PTO’s inability to manufacture products or to obtain and compare prior art products.*

ANALYSIS

The Patent Owner has argued the rejections based on Koiso as a principal reference on the same or similar grounds (App. Br. 13-16, 19). In addition, the Patent Owner has not provided any arguments in support of the separate patentability of any particular claim. Accordingly, we confine our discussion to claim 1. *See* 37 C.F.R. § 41.37(c)(1)(vii).

The Patent Owner contends that Koiso’s description of a polyethylene or polypropylene surface material does not anticipate a “low coefficient of friction” surface material, as recited in claim 1 (App. Br. 14). Specifically, the Patent Owner relies on Ramachandran’s testimony that the coefficient of friction of polyethylene or polypropylene depends on parameters such as film density and surface lubricant concentration and therefore the recited “low coefficient of friction” characteristic is not necessarily present in the prior art (App. Br. 14; FF 13).

We are not persuaded that the Examiner erred. The inventor did not limit the terms “low coefficient of friction” with any particular numerical degree of friction either in the claim itself or by way of a definition in the Specification. Rather, the inventor informed the person of ordinary skill in the art that the limitation “low coefficient of friction” reads on any degree of friction, provided that the heat pack “easily slide[s] into a pocket” (FF 3). Additionally, in describing preferred embodiments, the inventor stated that any polyethylene and polypropylene – without any limitation as to density or lubricant content – are non-limiting examples of polymers suitable as air impermeable surface area materials (FF 2). Koiso plainly describes the same type of heat pack in the form of an exothermic body that has a relatively smooth surface topography and includes air impermeable polyethylene or polypropylene surfaces (FF 8-10). These facts, coupled with the PTO’s inability to manufacture and/or test products, form a sufficient basis upon which to shift the burden of proof to the Patent Owner to show that Koiso’s product would be difficult to slide into a pocket. *Best*, 562 F.2d at 1255.

The Patent Owner failed to satisfy that burden. Here, the Patent Owner relied on the Ramachandran Declaration. Ramachandran’s testimony, however, is that of an interested party and, as pointed out by the Examiner (Ans. 16-17), is devoid of any supporting experimental evidence or technical reasoning. For example, the testimony lacks any detailed explanation or supporting evidence on why it is believed that only polyethylenes and polypropylenes of a certain film density and surface lubricant concentration would have a “low coefficient of friction” (FF 12-

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16). Notably, the Declaration lacks any test data or a detailed technical explanation reasonably demonstrating that Koiso's heat pack with polyethylene or polypropylene would be difficult to slide into a pocket (FF 16). Accordingly, Ramachandran's testimony amounts to mere conclusory statements, which are entitled to little, if any, weight.

Moreover, we find, as did the Examiner (Ans. 16-17), that Ramachandran's testimony is inconsistent with the inventor's disclosure in the '553 Patent. The '553 Patent plainly teaches the characteristic of being difficult to insert into a pocket (in the context of prior art pouches that include a self-adhesive) as undesirable (FF 11). That description reasonably informs one skilled in the relevant art that the invention described in the '553 Patent is limited to apparatuses that can easily slide into a pocket. In describing suitable surface materials for the claimed apparatus, the '553 Patent places no limitation on the density or the surface lubricant content for polyethylene or polypropylene (FF 2). Thus, on this record, we do not find it credible that only certain polyethylenes and polypropylenes having particular densities and lubricant contents would be suitable, as Ramachandran would have us believe.

In view of the foregoing, we sustain the rejections based on Koiso as a principal reference.

DECISION

Rejections I, II, IV, V, VII (Tsuji in view of Ohbiki), and VIII (Tsuji or Ohbiki in view of Yates) are reversed.

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Rejections III, VI, VII (Koiso in view of Ohbiki), VIII (Koiso in view of Yates), and IX are affirmed.

Therefore, the Examiner's decision to reject claims 1-4, 8-16, and 18 is affirmed, but the decision to reject claim 19 is reversed.

Requests for extensions of time in this *ex parte* reexamination proceeding are governed by 37 C.F.R. § 1.550(c). *See* 37 C.F.R. § 41.50(f).

AFFIRMED-IN-PART & REVERSED-IN-PART

rvb

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