

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

In re *Inter Partes* Review of:
U.S. Patent No. 8,898,812 B2

For: GARMENT HAVING INTEGRATED
PERSPIRATION BARRIERS

DECLARATION OF DR. DAVID BROOKSTEIN

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I, David Brookstein, hereby declare and state as follows:

1. I have been retained as a technical consultant on behalf of Wearable Confidence LLC (“Wearable Confidence”) the Petitioner in the present proceeding, and I am being compensated at my usual and customary hourly rate of \$400 per hour. I understand that the petition names Wearable Confidence as the real party-in-interest. I have no financial interest in, or current affiliation with, the petitioner, real parties-in-interest, or the Patent Owner, which I understand to be 3 Pak Holdings LLC (“3 Pak”). My compensation is not dependent upon the outcome of, or my testimony in, the present *inter partes* review or any litigation proceedings.

2. I understand that the application that led to the U.S. Patent No. 8,898,812 (“the ’812 Patent,” Exhibit 1001) is U.S. Patent Application No. 13/282,148 which was filed on October 26, 2011. The ’812 Patent claims priority to a provisional application (61/436,841) that was filed on January 27, 2011.

I. BACKGROUND AND QUALIFICATIONS

3. I was awarded a Bachelor of Textile Engineering degree from the Georgia Institute of Technology (“Georgia Tech”) in 1971, a Master of Science in Textile Technology from the Massachusetts Institute of Technology (“MIT”) in 1973, and a Doctor of Science in the field of mechanical engineering from MIT in 1976. My doctoral dissertation was in the field of textile research. My current *curriculum vitae* (Exhibit 1006) is made part of this Declaration.

4. I was a professor of Textile Engineering at Georgia Tech from 1975 to 1980. I was the Associate Director of Albany International Research Co. (formerly Fabric Research Laboratories) from 1980 to 1994. I was Dean of the School of Engineering and Textiles and Executive Director of Research at Philadelphia University (formerly Philadelphia College of Textiles and Science) from 1994 to 2010.

5. In 2010, I was appointed Executive Dean for University Research at Philadelphia University and served in that position through June 2012. In July 2012, I became Dean of the Science, Technology, Engineering, and Mathematics Division of Montgomery County Community College in Pennsylvania.

6. In May 2013, I took a sabbatical from academia and consulted full-time in areas associated with textiles, apparel and textile manufacturing.

7. In July 2014, I was appointed Professor of Mechanical Engineering and Director of Undergraduate Affairs at Temple University College of Engineering in Philadelphia. In 2015, I was promoted to Associate Dean for Undergraduate Studies in the College of Engineering at Temple University.

8. I was elected a Fellow of the American Society of Mechanical Engineers in 1995 and a Fellow of the Textile Institute (U.K.) in 1992.

9. I am a named inventor on twelve (12) U.S. patents dealing with textile materials and textile manufacturing. I have over 42 years of research and development

experience in the field of textile research, development and manufacturing. As such, I am fully qualified to offer technical expert opinions associated with the '812 Patent.

II. MATERIALS REVIEWED AND CONSIDERED

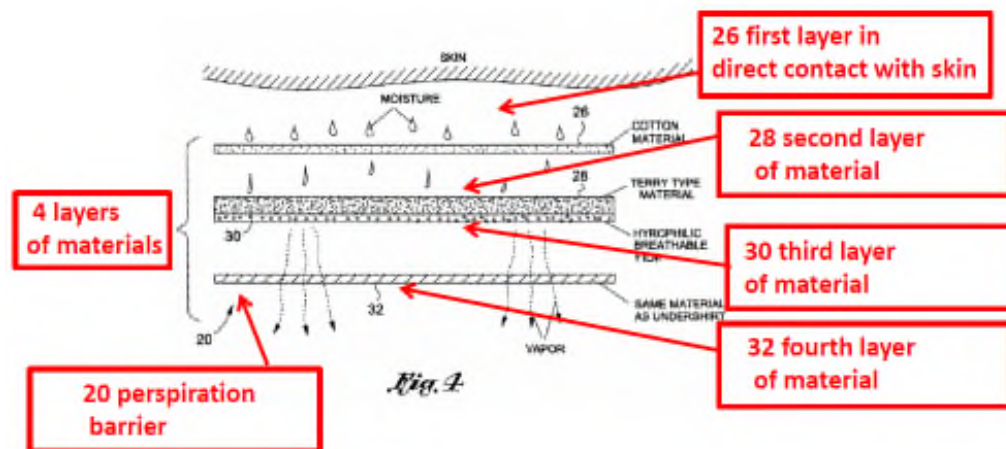
10. In connection with my work on this matter, I have reviewed the following materials and references:

Exhibit	Shorthand Reference	Full Citation
1001	'812 Patent	U.S. Patent No. 8,898,812
1002	'812 Patent File History	The file history of the '812 Patent
1003	Van Emden	WO 2004/089614 A2
1004	Bryan	US 2008/0052802 A1
1005	Van Emden II	US 2008/0096001 A1

III. OVERVIEW OF THE '812 PATENT

11. The '812 Patent discloses a garment or undergarment (e.g., a T-shirt) which is provided with integrated multi-layer perspiration barriers. The perspiration barriers are integrated into the sleeve and torso portions of the garment such that such perspiration barriers actually define part of the underarm portions thereof. Each of the perspiration barriers is preferably comprised of four layers. The stated purposes in the '812 Patent of the “integrated multi-layer perspiration barriers” is to provide “evaporative cooling and vapor moisture transmission” configured so that the “perspiration barriers actually define the underarm portions” of the garment. ('812 Patent at 2:31-45).

12. An embodiment of the disclosed multi-layer perspiration barriers is shown in Fig. 4 of the '812 Patent (reproduced below and annotated).



IV. LEGAL STANDARD

13. I am not a patent attorney, and I am not a patent law expert. It is my

understanding that pre-AIA 35 U.S.C. §102(b) governs an anticipation determination for the '812 Patent. §102(b) states:

A person shall be entitled to a patent unless —
the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of the application for patent in the United States.

14. It is my understanding that pre-AIA 35 U.S.C. §103(a) governs an obviousness determination for the '812 Patent. §103(a) states:

A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

15. I understand that four factors that should be considered in an obviousness inquiry are: (1) the scope and content of the prior art; (2) the differences between the prior art and the claims; (3) the level of ordinary skill in the pertinent art; and (4) secondary considerations, including long-felt need, commercial success, and unexpected results.

16. I further understand that the following rationales provided by the U.S.

Supreme Court and adopted by the U.S. Patent and Trademark Office can support a finding of obviousness. *See KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398 (2007); and Manual of Patent Examining Procedure Section 2143.

(A) Combining prior art elements according to known methods to yield predictable results;

(B) Simple substitution of one known element for another to obtain predictable results;

(C) Use of known technique to improve similar devices (methods, or products) in the same way;

(D) Applying a known technique to a known device (method, or product) ready for improvement to yield predictable results;

(E) “Obvious to try” – choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success;

(F) Known work in one field of endeavor may prompt variations of it for use in either the same field or a different one based on design incentives or other market forces if the variations are predictable to one of ordinary skill in the art;

(G) Some teaching, suggestion, or motivation in the prior art that would have led one of ordinary skill to modify the prior art reference or to combine prior art reference teachings to arrive at the claimed invention.

V. LEVEL OF ORDINARY SKILL

17. I have been advised by counsel that the claims of a patent are reviewed from the point of view of a hypothetical person of ordinary skill in the art at the time of the filing of the patent (“POSA”). The “art” is the field of technology to which a patent is related. I understand that a person of ordinary skill in the art is one who is presumed to be aware of all pertinent art, thinks along lines of conventional wisdom in the art, and is a person of ordinary creativity. I have applied this standard throughout my report.

18. The relevant field of art of the ’812 Patent “relates generally to wearing apparel.” (’812 Patent at 1:20-55).

19. In order to determine the characteristics of a POSA, I have considered the prior art and the various approaches in the relevant prior art, the type of problems encountered, the solutions to those problems, the problems encountered by the inventor, and the rapidity with which innovations were made. I also considered the sophistication of the technology involved and the educational background and experience of those working in the relevant field at the time of the invention. Finally I placed myself back at the time of the alleged invention and considered the engineers and other professionals with whom I worked or whom I had taught in the relevant industries, and their level of education, activities, and sophistication.

20. Based on those considerations, my opinion is that a POSA would have a

four-year degree in textile engineering, mechanical engineering, or a related field of study and two years of experience in one of the relevant fields of textile engineering, textile technology, or mechanical engineering. A POSA could also have either a Master's degree in textile engineering, mechanical engineering, or a related field. This description is approximate, and a higher level of training might make up for less education, and vice-versa.

21. In view of my education and experience as a dean and professor in the areas of textile engineering and mechanical engineering, as a research and development laboratory director, as a technical consultant and practitioner in the textile industry in the areas of textile and apparel research, development, and manufacturing, and as summarized above and in my attached curriculum vitae, I meet or exceed the definition of a POSA.

22. In arriving at my opinions and conclusions in this declaration, I have considered the issues from the perspective of a POSA at the time of filing of the '812 Patent.

VI. OVERVIEW OF PRIOR ART

A. Van Emden

23. PCT International Publication Number WO 2004/089614 A2 ("Van Emden," Exhibit 1003) entitled "IMPROVEMENTS IN OR RELATING TO FABRICS" was published on October 21, 2004, which is more than one year prior to

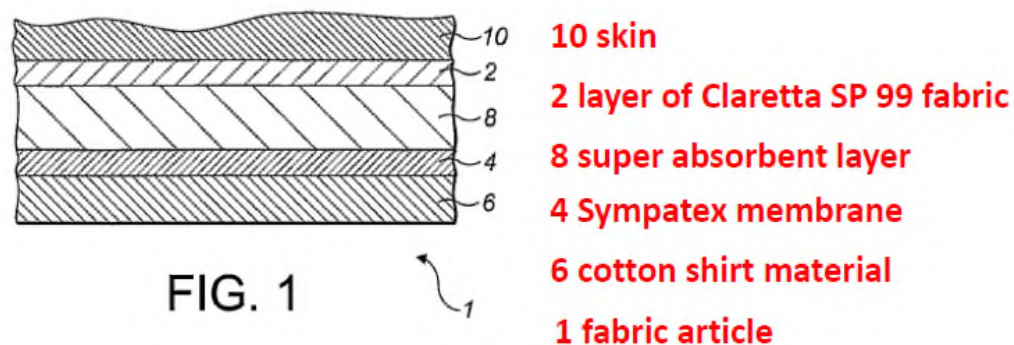
the January 27, 2011 provisional filing date of the '812 Patent. Accordingly, it is my understanding that Van Emden qualifies as prior art to the '812 Patent under 35 U.S.C. Section 102(b). Van Emden does not appear on the list of references considered by the Examiner during the prosecution of the '812 Patent, nor was it referenced or cited by the Patentees of the '812 Patent.

24. Van Emden discloses a laminate structure suitable for use in fabric articles and, in particular, to articles of clothing, footwear, headgear and other items likely to come in contact with a person's skin and associated perspiration. (Van Emden at p. 1, lines 3-7). A laminate according to Van Emden "includes in its definition a layered item comprising two or more layers." (Van Emden at p. 5, lines 29-30).

25. Like the '812 Patent, Van Emden discloses that one of its purposes is to "provide fabric articles ... which include breathable material as an integral part of the article, which have sanitary properties, and preferably which prevents visible moisture build-up on or within the article." (Van Emden at p. 3, lines 5-10). Van Emden accomplishes this purpose in the same way as the '812 Patent by providing a laminate incorporated into "an article of clothing in which perspiration from a user is firstly [neutralized] in terms of [odor] and bacteria by the second layer 2 [of the laminate]; large quantities of perspiration are absorbed by the intermediate super absorbent layer 8; liquid perspiration is retained within the super absorbent layer 8 whilst [vapor] is wicked through the liquid impermeable, [vapor] permeable first layer 4 and out of the

fabric of the outer fabric 6.” (Van Emden at p. 28, lines 17-25; *see also* p. 36, lines 1-22).

26. Figure 1 is a preferred embodiment of the fabric article incorporating the Van Emden laminate. (Van Emden at p. 26, line 30 – p. 27, line 1). I annotated Figure 1 of Van Emden below to identify each layer of the laminate structure in relation to the skin of the user.



Van Emden at FIG. 1, annotated

27. Van Emden recites the following description of FIG. 1. “The fabric article 1 comprises a second layer 2 in the form of a layer of Claretta (RTM) SP-99 fabric ... Connected to one side of the inner layer 2 is an intermediate layer 8 comprising 100% cotton to provide a super absorbent layer. Connected to the other side of the intermediate layer 8 is a first layer 4 consisting of a Sympatex (RTM) 10-micrometre membrane, which is liquid impermeable but [vapor] permeable. Integral with the first layer 4 is an outer fabric 6 consisting of the fabric material of a cotton shirt.” (Van Emden at p. 27, lines 3-18). Like the ’812

Patent, “preferably the fabric layer forms at least part of the exterior layer ... of the article of clothing” and “may form ... all of, the exterior layer of the article of clothing”. (Van Emden at p. 37, line 30 - 38, line 1). As discussed below, these four layers of the Van Emden laminate disclose the four layers recited by Claim 15 of the ’812 Patent.

B. Bryan

28. US 2008/0052802 (“Bryan,” Exhibit 1004) entitled “ELASTIC UPPER-BODY UNDERWEAR” was published on March 6, 2008, which is more than one year prior to the January 27, 2011 provisional filing date of the ’812 Patent. Accordingly, it is my understanding that Bryan qualifies as prior art to the ’812 Patent under 35 U.S.C. Section 102(b). Bryan does appear on the face of the ’812 Patent, but was not cited or substantively considered by the Examiner during the prosecution of the ’812 Patent, nor was it considered in combination with Van Emden.

29. Bryan discloses an elastic upper-body undergarment with absorbent material integrated into the arm pits regions of the garment to provide sweat protection. (Bryan at Abstract). Similar to the ’812 Patent and Van Emden, armpit regions of the garment have a first, a second, and a third layer and the third layer is adjacent to the outer layer of the undergarment. (*See* Bryan at [0009], [0010]). These layers include, respectively, a wicking material that wicks away moisture, an absorbent material, a waterproof barrier, and the outer layer of the undergarment. (*See* Bryan at [0009],

[0010]).

30. Figure 1A of Bryan below shows an “upper undergarment 10 ... [with] a body portion 20 with two armpit regions 30A and 30B, an edge 40, a neckline 50 and sleeves 60A and 60B on a user 100.” (Bryan at [0028]).



Bryan at FIG. 1A

31. “Preferably, armpit regions 30A and 30B are made of an absorbent material that can absorb sweat while being worn and prevent stains from forming on the consumers outer garment.” (Bryan at [0033]). The absorbent material preferably is made of, for example, “terry toweling fabric, bamboo, microfibre fabrics, hemp, wood pulp, sphagnum moss, etc.” (Bryan at [0034]). “Armpit regions 30A and 30B are located on body portion 20 and in the armpit area.” (Bryan at [0032]).

32. In a preferred embodiment of Bryan, “the armpit regions ... have been cut out as a hole” and “[a]round the edge of the hole is a thin area of the absorbent

material.” “The armpit pads in this preferred method of construction would have an outer edge with adhesive that attaches to the thin area of the absorbent material around the hole.” (Bryan at [0047]). Bryan also explains that “the pads can be inserted, knitted, sewn or weaved into the armpit regions.” (Bryan at [0045]).

VII. ANALYSIS OF CLAIM 15 OF THE '812 PATENT

A. Claim 15 in View of Van Emden and Bryan

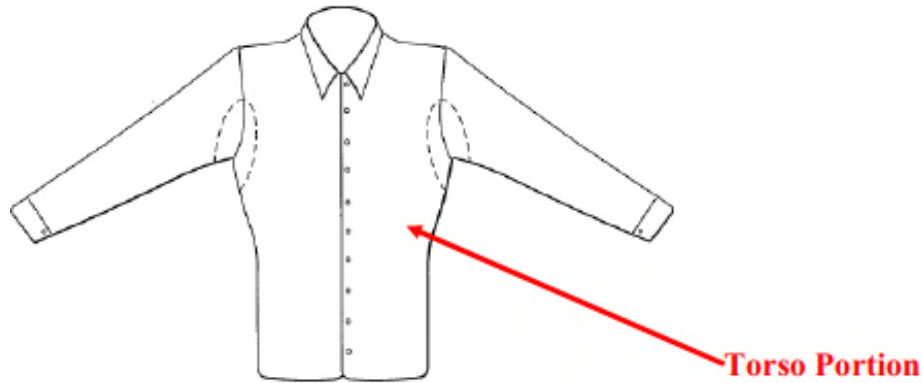
33. It is my expert opinion that Claim 15 of the '812 Patent is obvious over Van Emden in combination with Bryan.

Claim 15 [Preamble]: A garment having an internal surface adapted to contact a wearer's skin and an external surface, the garment, comprising:

34. Van Emden discloses a laminate structure suitable for use in fabric articles and, in particular, to articles of **clothing**, footwear, headgear and other items likely to come in contact with a person's skin and its associated perspiration. (Van Emden at p. 1, lines 3-7) (emphasis added).

Claim 15 [a]: a torso portion;

35. Van Emden discloses that “Figure 3 illustrates an article of clothing of the present invention, more specifically a shirt....” (Van Emden at p. 26, lines 18-19). In annotated Figure 3 of Van Emden below I show the torso portion of the shirt.



Van Emden at FIG. 3, annotated

Claim 15 [b]: a pair of sleeve portions attached to and extending from the torso portion in opposed relation to each other; and

36. In annotated Figure 3 of Van Emden below I show the sleeve portions of the shirt attached to and extending from the torso portion in opposed relation to each other.

a pair of sleeve portions attached to and extending from the torso portion in opposed relation to each other

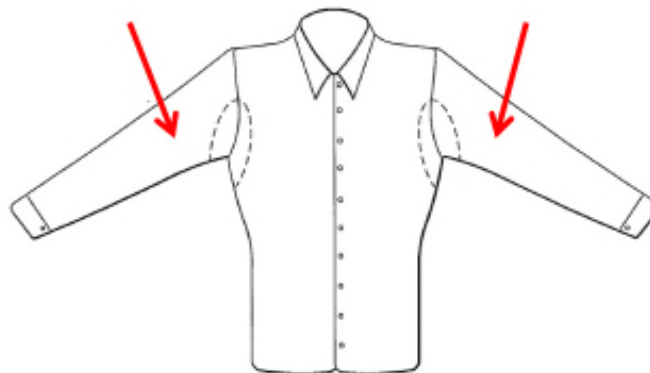
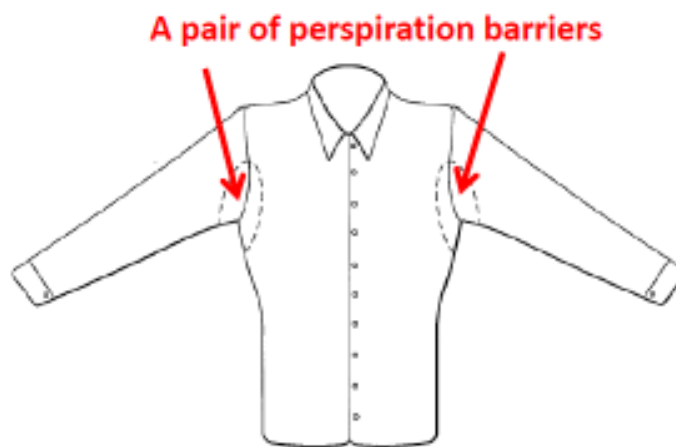


FIG. 3

Van Emden at FIG. 3, annotated

Claim 15 [c]: a pair of perspiration barriers, each of the perspiration barriers comprising:

37. Annotated Figure 3 of Van Emden below shows armpit regions of the shirt each having a perspiration barrier. Van Emden discloses that the multiple layered waterproof breathable fabric construction can be a localized panel under the armpit region of a shirt or T-shirt. (Van Emden at p. 37, lines 2-5).



Van Emden at FIG. 3, annotated

Claim 15[d]: a first layer fabricated from a soft, pliable material adapted to permit the transmission of moisture therethrough;

38. The inner layer 2 of the Van Emden laminate, located closest to the skin of the user and consisting in an embodiment of Claretta (RTM) SP-99 fabric, would have been considered “a first layer fabricated from a soft, pliable material adapted to permit the transmission of moisture therethrough” as recited by Claim 15 of the ’812 Patent. As stated in Van Emden, “perspiration from the skin 10 will firstly traverse to

the second layer 2” and “[a]ny moisture will then travel through the second layer 2.” (Van Emden at p. 27, lines 27-33). This “second layer may comprise a woven, knitted or non-woven textile material cover, finish or sheet” including natural materials such as “cotton, linen, flax, hemp, jute, wool and mixtures thereof.” (Van Emden at p. 11, line 25 - p. 12, line 5). All of these materials would have been considered soft, pliable, and adapted to transmit moisture through the inner layer 2 of Van Emden.

39. In addition, one of ordinary skill in the art would have known Claretta (RTM) SP-99 fabric to be a soft, pliable material adapted to permit the transmission of moisture therethrough. For example, I went to the USPTO patent web-based search site and searched for the word “Claretta” and found US 2008/0096001 titled “Breathable Fabric” (Exhibit 1005: “Van Emden II”) by the identical patentees of Van Emden. Van Emden II was published on April 24, 2008, which is more than one year before the January 27, 2011 provisional filing date of the ’812 Patent.

40. As evidenced by Van Emden II, Claretta (RTM) SP-99 is similar to cotton in construction and function. *See* Van Emden II at [0265]: (“This inner layer was Claretta SP-99-Shine UP, manufactured by Kuraray. The low denier fibres formed a very light, knitted fabric. The weight of the inner layer alone was approximately 70 gsm. The knit construction allowed the resultant fabric to be comfortable and have a drape and handle similar to a standard cotton shirt.”). Van Emden II also discloses that the Claretta SP-99 “was able to wick liquid moisture.” (Van Emden II at [0268]).

Claim 15[e]: a second layer disposed adjacent the first layer and fabricated from a loosely woven material;

41. Van Emden in combination with Bryan discloses a “second layer disposed adjacent the first layer and fabricated from a loosely woven material,” as recited in Claim 15 of the ’812 Patent.

42. Van Emden discloses a second layer (intermediate layer 8 shown in Figure 1) “[c]onnected to one side of the inner layer 2 [that] is an intermediate layer 8 comprising 100% cotton to provide a super absorbent layer.” (Van Emden at p. 27, lines 11-13). The “intermediate layer 8 is 100% cotton, which has excellent moisture absorbing properties.” (Van Emden at p. 29, lines 24-25). One of ordinary skill in the art would have understood that cotton can be loosely woven to facilitate the described “super absorbent” property. Additionally, Van Emden discloses that the cotton intermediate layer 8 “may be interweaved with the second layer 2 and or first layer 4.” (Van Emden at page 29, lines 25-27 (emphasis added)). One of ordinary skill in the art would have understood the intermediate layer 8 to be a woven material in order to be interweaved with the second layer 2 and or first layer 4. Van Emden contemplates that “[m]any other types of material may be used for the absorbent layer 8.” (Van Emden at page 30, lines 4-6).

43. Bryan discloses the use of terry toweling fabric for the absorbent material in its armpit regions 30A, 30B. (Bryan at [0034].) Terry toweling fabric is a type of loosely woven cotton fabric that is used for its absorbent qualities. This absorbent

material is described in Bryan “in a very broad sense to include any article that is able to receive and/or absorb and/or contain and/or retain fluids, especially bodily fluids.” (Bryan at [0034]). The Terry toweling fabric disclosed in Bryan is the same loosely woven material disclosed in the specification of the ’812 Patent. (*See e.g.*, Bryan at [0034], [0043]). Bryan discloses that the terry cloth “can absorb sweat during wearing and prevent stains [from] forming on the user’s outer garment.” (Bryan at [0043]).

44. One of ordinary skill in the art would have been motivated to form Van Emden’s cotton intermediate layer 8 as a “loosely woven” cotton material (e.g., terry cloth), as described by Bryan, in order to achieve the “super absorbent layer” with “excellent moisture absorbing properties” described by Van Emden. One of ordinary skill in the art would have known that the use of Bryan’s terry cloth (a type of woven cotton material) as the cotton intermediate layer 8 of Van Emden would have led to the predictable result of providing absorbency. Additionally, one of ordinary skill in the art would have known that the substitution of Bryan’s terry cloth (a loosely woven cotton material) for Van Emden’s woven cotton intermediate layer 8 would have provided the predictable result of providing absorbency.

Claim 15[f]: a third layer disposed adjacent the second layer and fabricated from a hydrophilic breathable film; and

45. The first layer 4 disclosed in Figure 1 of Van Emden, consisting in an embodiment of a Sympatex (RTM) 10-micrometre membrane, is a “third layer

disposed adjacent the second layer and fabricated from a hydrophilic breathable film,” as recited in Claim 15 of the ’812 Patent. Van Emden discloses that “[c]onnected to the other side of the intermediate layer 8 is a first layer 4 consisting of a Sympatex (RTM) 10-micrometre membrane, which is liquid impermeable but vapour permeable.” (Van Emden at p. 27, ll. 13-16). The Sympatex (RTM) 10-micrometre membrane is liquid impermeable (hydrophilic) but vapor permeable (breathable), just like the hydrophilic breathable film shown in Figure 4 of the ’812 Patent.

46. Van Emden also discloses that the first layer 4 of the laminate is “a non-porous polyester membrane comprising hydrophilic zones. It is ... water resistant but highly breathable to water vapour.” (Van Emden at p. 30, lines 15-18). Finally, Van Emden expressly discloses that the first layer 4 of the laminate can be a film. (*See* Van Emden at p. 7, lines 18-30 (“The first layer ... typically is a coating, film or membrane.”). As a result, the first layer 4 of the Van Emden laminate is the same as the third layer of hydrophilic breathable film recited by Claim 15 of the ’812 Patent.

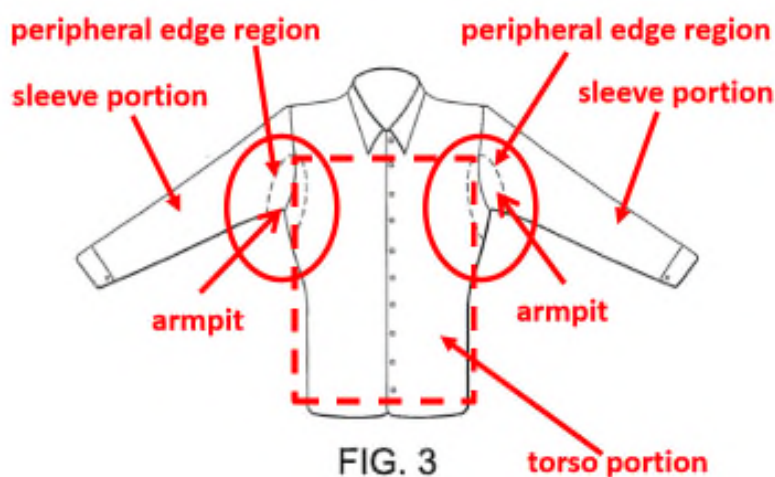
Claim 15[g]: a fourth layer disposed adjacent the third layer,

47. Figure 1 of Van Emden discloses a fabric article 1 defined by an outer fabric 6. (Van Emden at p. 27, ll. 25-26.) The outer fabric 6 is disposed adjacent the liquid impermeable but vapour permeable first layer 4. (*See* Van Emden at Fig. 1 and p. 27, ll. 13-16). The fourth layer of the laminate disclosed in Figure 1 of Van Emden is an outer fabric consisting of the fabric material of a cotton shirt. (Van Emden at p.

27, lines 16-18).

Claim 15[h]: the pair of perspiration barriers defining respectively barrier peripheral edge regions, each barrier peripheral edge region being coupled to and at least partially circumvented by a corresponding peripheral edge region collectively defined by the torso portion and a respective one of the sleeve portions such that the external surface of an underarm area of the garment is collectively formed by each of the fourth layers of the perspiration barriers and the respective torso and sleeve portions.

48. I annotated Figure 3 of Van Emden below. “Figure 3 illustrates an article of clothing of [Van Emden], more specifically a shirt in which the armpit regions have a laminate construction.” (Van Emden at p. 26, lines 17-19).



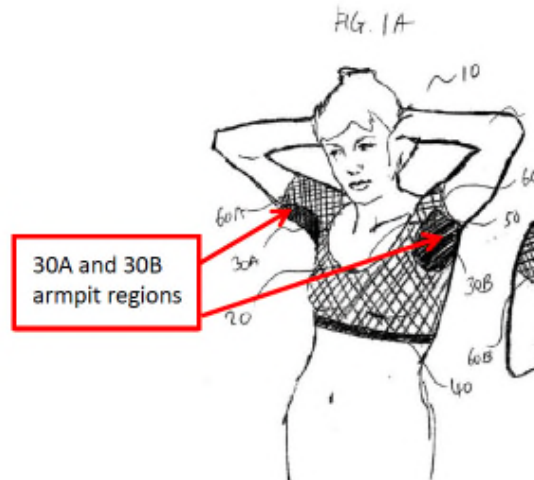
Van Emden at FIG. 3, annotated

49. Van Emden discloses that the multiple layered waterproof breathable “fabric” construction can be either as a localized panel, such as under the armpit region of a shirt or T-shirt, or as a complete garment.” (Van Emden at p. 37, lines 2-5). As

shown in annotated Figure 3, above, when formed as a localized panel, each laminate defines a peripheral edge region surrounded by the torso portion and a respective sleeve portion of the shirt.

50. Van Emden describes that “the fabric layer [of the laminate] forms at least part of the exterior layer ... of the article of clothing” and the “fabric layer may form substantially all of, or all of, the exterior layer of the article of clothing.” (Van Emden at p. 37, line 30 - p. 38, line 1). Accordingly, Van Emden expressly discloses that the fabric layer 6 of the disclosed laminate forms the exterior layer of the article of clothing. (Van Emden at p.17, lines 12-14; p. 37, line 30 - p. 38, line 1). The external surface of the underarm area of the garment is therefore collectively formed by each of the fabric layer 6 and the respective torso and sleeve portions. (Van Emden at Fig. 3).

51. In addition, Bryan, which is in the same field of endeavor as Van Emden, discloses a process of constructing a garment. In Figure 1A, Bryan discloses an “upper undergarment 10 [with] a body portion 20 with two armpit regions 30A and 30B... and sleeves 60A and 60B.” (Bryan at [0028]).

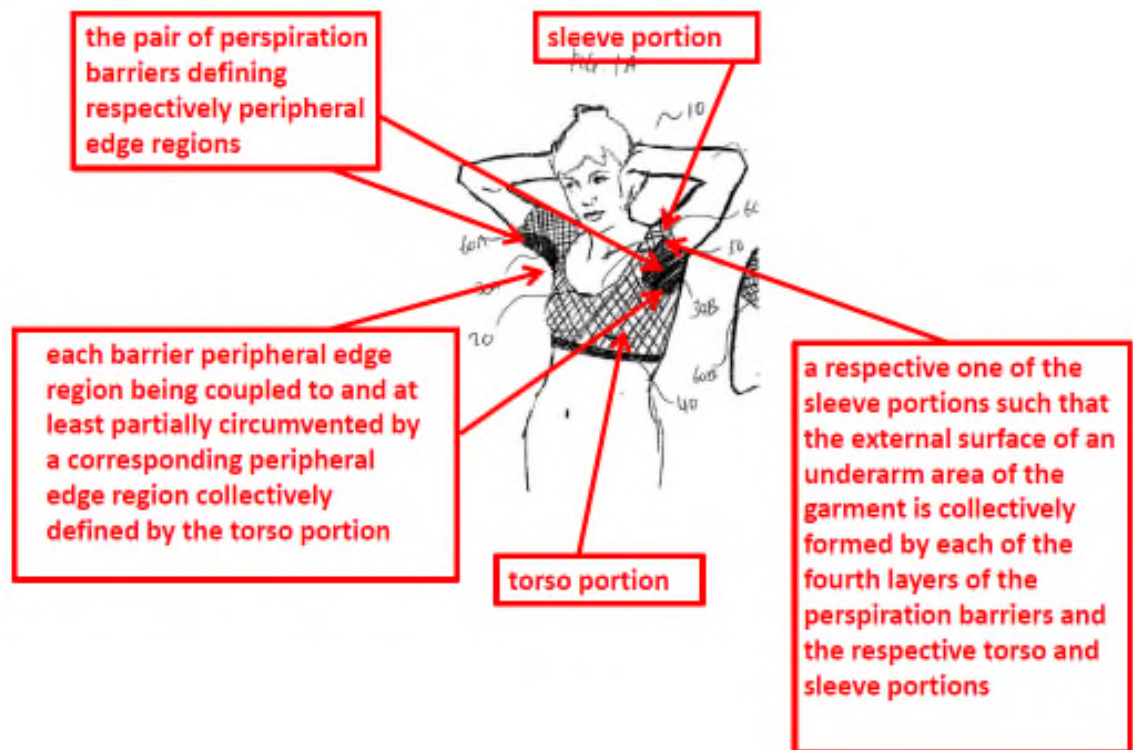


Bryan at FIG. 1A, annotated

52. Bryan discloses that “[p]referably, armpit regions 30A and 30B [of the Bryan garment] are made of an absorbent material that can absorb sweat while being worn and prevent stains from forming on the consumers outer garment.” (Bryan at [0033]). Bryan also discloses that “[o]ne preferred method is to have the absorbent material sewn directly into the armpit region. This can be done by using any sewing or knitting machine that preferably would generate a one piece of undergarment with the absorbent material.” (Bryan at [0037]).

53. In an embodiment of Bryan, “the area where the armpit regions would have been [are] cut out as a hole. Around the edge of the hole is a thin area of the absorbent material. The armpit pads in this preferred method would have an outer edge with adhesive that attaches to the thin area of the absorbent material around the hole.” (Bryan at [0047]). According to this construction, each of the armpit regions 30A, 30B define a barrier peripheral edge region. Additionally, the body portion 20 define a

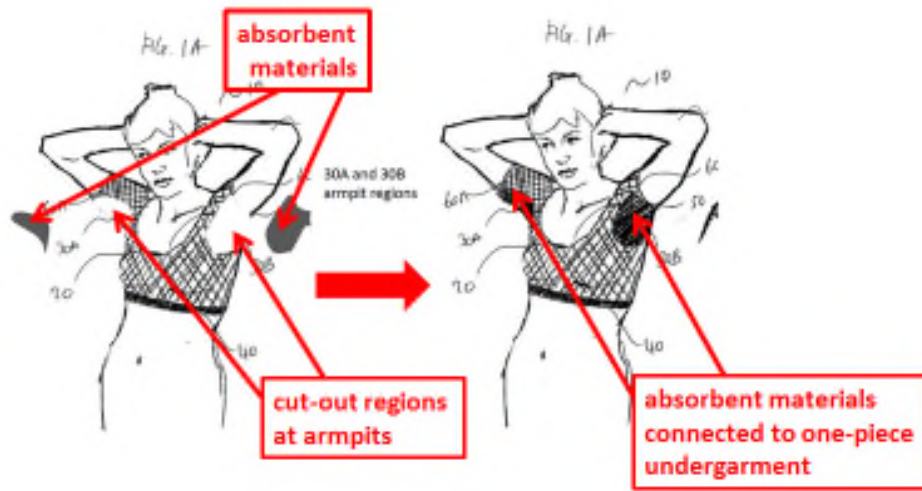
corresponding peripheral edge region under each armpit (i.e., around the edge of the hole). As shown in the annotated Figure 1A from Bryan, below, the corresponding peripheral edge regions are defined by the torso portion and the respective sleeve portions.



Bryan at FIG. 1A, annotated

54. The outer edge of the armpit regions 30A, 30B are attached to the hole in the garment. As such, one of ordinary skill in the art would have understood that the one-piece garment would necessarily have an area where the absorbent pad was located and would have a cut-out in that area to enable an absorbent pad to be connected to the garment and thus would directly be against the wearer's skin. I have annotated Figure

1A to depict what is discussed above.



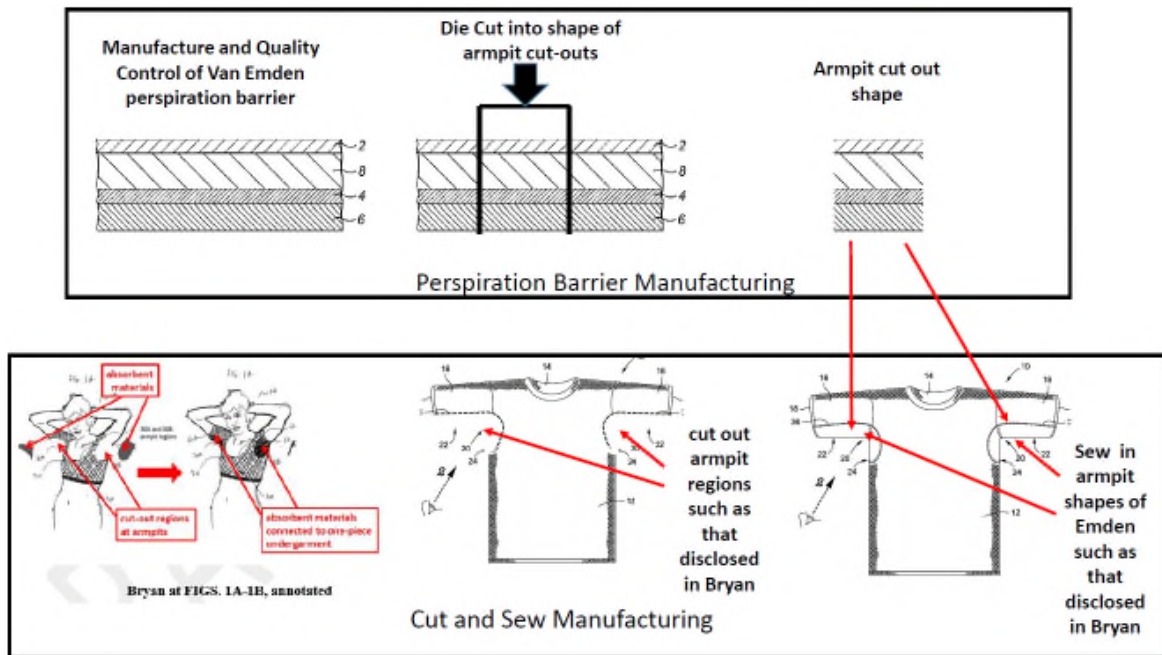
Bryan at FIG. 1A, annotated

55. One of ordinary skill in the art would have been motivated to connect the laminates of Van Emden into holes defined by the sleeve and torso regions of Van Emden's article 1 (shirt), as described and depicted in annotated Figure 1A of Bryan, above, resulting in barrier peripheral edge regions of the Van Emden laminate being coupled to and at least partially circumvented by corresponding peripheral edge regions of the torso and sleeve portions of Van Emden's article 1. This modification would have resulted in the external surface of Van Emden's article 1 being collectively defined by the fabric layer 6 of Van Emden's laminate, and the respective torso and sleeve portions of Van Emden's fabric article 1.

56. One of ordinary skill in the art would have known that the perspiration barrier disclosed in Van Emden, which is essentially identical to the perspiration

barrier disclosed in the '812 Patent, could be readily manufactured in continuous sheets and then die cut to the shape disclosed in Figure 3 of the '812 Patent. Van Emden and Bryan both disclose perspiration barriers where the outer layer of the perspiration barrier is the same as the outside layer of the garment. One of ordinary skill in the art would have understood that the process for making the Van Emden's perspiration barrier is different from making a shirt, which is usually done at a "cut and sew" clothing manufacturer. Accordingly, it would have been obvious to one of ordinary skill to make the Van Emden perspiration barrier separately from the garment, die-cut the Van Emden perspiration barrier into the required shape to fit into the cut-out armpit of the garment, and couple the Van Emden perspiration barrier to the cut-out armpit of the garment as disclosed by Bryan.

57. Further, since there are functional performance requirements (e.g., high levels of evaporative cooling and vapor transmission) for the pad, one of ordinary skill in the art would have understood that, by manufacturing the absorbent pad separately, the manufacturer could conduct quality control procedures for the perspiration barriers independent of the finished article of clothing prior to sewing the perspiration barrier into to the cut-out armpit region of the clothing. This is illustrated in the drawing that I prepared and provided below.



58. It is therefore my opinion that one of ordinary skill in the art would have been motivated to combine the teachings of Van Emden with the teachings of Bryan to obtain element 15(h) of the '812 Patent. For example, one of ordinary skill in the art would have applied Bryan's method of attaching the sweat pad to the garment to the construction disclosed in Van Emden in order to obtain the predictable result of manufacturing efficiency. Additionally, the combination of Van Emden and Bryan is simply combining prior art elements of Van Emden and Bryan according to known construction methods to yield the predictable result of manufacturing efficiency. This is also a simple substitution of one known method of attachment of a sweat pad to a shirt for another to obtain predictable results. The method of attaching a sweat pad to holes in a shirt described in Bryan is a known technique of attachment as indicated in Bryan as a preferred method of attachment. There are a finite number of identified,

predictable methods of attaching a perspiration barrier to a shirt, one of which is attaching the perspiration barrier through a cut-out in the torso and sleeve region (e.g. armpit region) of the shirt, as described in Bryan. Use of this method with the Van Emden laminate maintains the perspiration protection as disclosed in Van Emden, and additionally provides manufacturing efficiency and quality control.

59. In view of the foregoing, it is my opinion that claim 15 of the '812 Patent is obvious over Van Emden in combination with Bryan.

I declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true. I further declare that all statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code.

Dated:

June 1, 2017



DR. DAVID BROOKSTEIN