

UNITED STATES PATENT AND TRADEMARK OFFICE

**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Ex parte HASSO VON BLÜCHER

Appeal 2008-2353
Application 10/835,123
Technology Center 3700

Decided: August 5, 2008

Before DONALD E. ADAMS, DEMETRA J. MILLS, and
FRANCISCO C. PRATS, *Administrative Patent Judges*.

PRATS, *Administrative Patent Judge*.

DECISION ON APPEAL

This is an appeal under 35 U.S.C. § 134 involving claims to handwear with a protective function against toxic chemical agents. The Examiner has rejected the claims as obvious. We have jurisdiction under 35 U.S.C. § 6(b). We reverse.

STATEMENT OF THE CASE

Claims 1, 2, 5, 7-10, and 12-46 are pending and on appeal (Ans. 2).
Claims 1 and 44-46 are the appealed independent claims. Claim 1 is representative and reads as follows:

1. Protective handwear with a protective function against toxic chemical agents, said protective handwear having a multilayer construction, at least a part of which is breathable in that it is selectively able to allow passage therethrough of certain substances, said protective handwear comprising:

a.) an outer support layer, which is farthest from a hand of a wearer when the protective handwear is being worn; and
b.) an inner barrier layer, which is at least partially resistant to the passage of toxic chemical agents therethrough, and which is arranged adjacent to said outer support layer, such that said inner barrier layer is nearest to the hand of the wearer when the protective handwear is being worn;

said inner barrier layer comprising:

i.) an adsorption layer, containing an adsorbent material, capable of adsorbing toxic chemical agents; and
ii.) a membrane, which is at least partially impermeable to the passage of air, liquid water, and toxic chemical agents therethrough, and which is at least partially permeable to the passage of water vapor therethrough, wherein said membrane is arranged between said outer support layer and said adsorption layer so that a side of said membrane facing the hand of the wearer is covered by said adsorption layer; and

c.) a second support layer arranged between said membrane and said outer support layer, said second support layer comprising a textile material having a lower weight per unit area than said outer support layer and being joined to said membrane by a discontinuously applied adhesive so that said membrane is supported and stabilized by said second support layer.

The Examiner relies on the following documents as evidence of unpatentability:

Ainsworth	US 3,586,596	Jun. 22, 1971
Giglia	US 4,459,332	Jul. 10, 1984
Blücher	US 4,510,193	Apr. 9, 1985
Plotzker	US 4,515,761	May 7, 1985
Farnworth	US 4,981,738	Jan. 1, 1991
Athayde	US 5,024,594	Jun. 18, 1991
Kelly	US 5,273,814	Dec. 28, 1993
Walker	US 5,740,551	Apr. 21, 1998
Baurmeister	US 5,743,775	Apr. 28, 1998
Williams	US 6,662,377 B2	Dec. 16, 2003
Hu	US 6,740,406 B2	May 25, 2004
Ramkumar	US 2005/0101211 A1	May 12, 2005

The following rejections are before us for review:

Claims 1, 2, 7-10, 15-17, 20-26, 28, 29, 33, 35-38, and 42-46 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Athayde, Williams, Farnworth, and Blücher (Ans. 3-7).

Claims 5, 12-14, and 34 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Athayde, Williams, Farnworth, Blücher, and Baurmeister (Ans. 7-8).

Claim 18 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Athayde, Williams, Farnworth, Blücher, and Giglia (Ans. 8-9).

Claim 19 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Athayde, Williams, Farnworth, Blücher, and Ainsworth (Ans. 9).

Claim 27 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Athayde, Williams, Farnworth, Blücher, and Kelly (Ans. 9).

Claims 30-32 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Athayde, Williams, Farnworth, Blücher, and Walker (Ans. 9-10).

Claim 39 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Athayde, Williams, Farnworth, Blücher, and Ramkumar (Ans. 10).

Claim 40 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Athayde, Williams, Farnworth, Blücher, Ramkumar, and Hu (Ans. 11).

Claim 41 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Athayde, Williams, Farnworth, Blücher, and Plotzker (Ans. 11).

OBVIOUSNESS

ATHAYDE, WILLIAMS, FARNWORTH, AND BLÜCHER

ISSUE

Claims 1, 2, 7-10, 15-17, 20-26, 28, 29, 33, 35-38, and 42-46 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Athayde, Williams, Farnworth, and Blücher (Ans. 3-7). The Examiner cites Athayde as disclosing “a protective clothing material with a breathable multilayer construction comprising an outer support layer 11 and an inner barrier layer comprising an adsorption layer 15 and a membrane 12, 13, the membrane 12 joined to outer support layer 11 as shown in Figure 2” (*id.* at 4).

The Examiner contends that Athayde “recognizes gloves as a necessary protective gear (see column 1, line 32) but does not expressly teach forming gloves from the protective clothing material” (*id.*). The Examiner cites Williams as forming gloves from protective material, and concludes that “[i]t would have been obvious to one of ordinary skill in the art at the time of the invention to form the protective clothing material of Athayde et al. to define handwear such as the glove of Williams to achieve the advantage of providing protection for the hands” (*id.*).

The Examiner concedes that Athayde also differs from claim 1 in failing “to define two support layers [with] one of the support layers joined to the membrane by a discontinuously applied adhesive” (*id.*). The Examiner cites Farnworth as disclosing the use of an optional outer support layer on protective clothing, and the use of bonding material, and concludes that one of ordinary skill in the art would have considered it obvious “to provide the material of Athayde et al. with the optional outer layer 48 of Farnworth et al. . . . thus defining the layer 11 of Athayde et al. as a second support layer to give strength and abrasion resistance to the protective material of Athayde et al. as taught by Farnworth et al. . . . (see column 3, line 59)” (*id.*).

The Examiner cites Blücher as “teach[ing as] old the use of a discontinuously applied adhesive to maintain a pliable nature (see column 5, lines 28-35)”, and concludes that “[i]t would have been obvious to one of ordinary skill in the art at the time of the invention to provide a discontinuously applied adhesive to secure the membrane and second support layer to enhance pliability of the glove” (*id.*).

Appellant argues that the combined teachings of the cited references do not teach or suggest the limitation in claim 1 of “a second support layer arranged between said membrane and said outer support layer,” the support layer “comprising a textile material having a lower weight per unit area than said outer support layer and being joined to said membrane by a discontinuously applied adhesive so that said membrane is supported and stabilized by said second support layer” (App. Br. 6).¹ Specifically, Appellant urges, Farnworth fails to disclose its layer 46 as capable of acting as a support layer (*id.* at 7), and also “fails to disclose that the layer 46 is connected to a membrane, where ‘a side of said membrane facing the hand of the wearer is covered by said adsorption layer’, as expressly recited in independent claim 1” (*id.* at 8).

Appellant further contends that Blücher does not meet claim 1’s limitation requiring the second support layer to be joined to the membrane by a discontinuously applied adhesive because Blücher “does not refer to the joining of a membrane to a support layer. Rather, *Blücher et al.* discloses only that the discontinuously applied adhesive is used for fixing adsorber particles to a support layer” (*id.* at 9).

Therefore, Appellant contends, “*Blücher et al.* is completely devoid of any teaching or suggestion that the discontinuously applied adhesive can be used or should be used for joining a support layer to a membrane, as recited in the claimed invention” (*id.*). Moreover, Appellant argues, “since the membrane 12 [of Athayde] is coated on the fabric 11, there is no teaching or suggestion for the second support layer being joined to said membrane by a

¹ Supplemental Appeal Brief filed April 23, 2007.

discontinuously applied adhesive, as expressly recited in the independent claims 1 and 44-46” (Reply Br. 2).

Independent claims 44-46 recite protective handwear having the same layers as recited in claim 1, including “a second support layer arranged between said membrane and said outer support layer,” the support layer “comprising a textile material having a lower weight per unit area than said outer support layer and being joined to said membrane by a discontinuously applied adhesive so that said membrane is supported and stabilized by said second support layer.” The issue with respect to this rejection, then, is whether the Examiner has shown that the cited references would have rendered protective handwear having the configuration of layers recited in claim 1 prima facie obvious to a person of ordinary skill in the art.

FINDINGS OF FACT (“FF”)

1. Claim 1 is directed to handwear that is protective against toxic chemical agents. The handwear has a multilayer construction, at least a part of which is selectively able to allow passage of certain substances.

The handwear has three main layers: (a) an outer support layer which is farthest from the wearer’s hand, (b) an inner barrier layer, and (c) a second support layer. The inner barrier layer is at least partially resistant to the passage of toxic chemical agents, and is arranged adjacent to the outer support layer, such that the inner barrier layer is nearest to the wearer’s hand.

The inner barrier has two layers: (i) an adsorption layer, containing an adsorbent material capable of adsorbing toxic chemical agents, and (ii) a membrane which is at least partially impermeable to the passage of air,

liquid water, and toxic chemical agents, and which is at least partially permeable to the passage of water vapor. The membrane is arranged between the outer support layer and the adsorption layer so that a side of the membrane facing the hand of the wearer is covered by said adsorption layer.

The second support layer is arranged between the membrane and outer support layer, and contains a textile material having a lower weight per unit area than the outer support layer. The second support layer is joined to the membrane by a discontinuously applied adhesive so that the membrane is supported and stabilized by said second support layer.

2. Figure 1, reproduced below, shows one embodiment of the claimed invention:

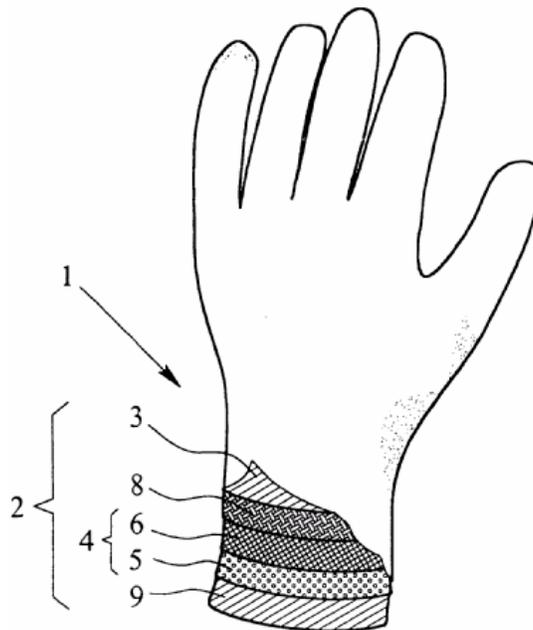


Fig. 1

The figure shows a glove with exposed layers. Specifically, outermost support layer 3 is adjacent to second support layer 8, which in

turn is adjacent to membrane 6, which in turn is adjacent to adsorption layer 5, with cover layer 9 being the innermost layer shown (*see* Spec. 9-12).

Membrane 6 and adsorption layer 5 make up barrier layer 4 (*id.* at 9). The Specification discloses:

The wear resistance properties, e.g., the tear strength, of the membrane 6 can also be increased by the additional support layer 8. For this purpose, the membrane 6 can be laminated or bonded on the additional support layer, especially by means of an adhesive (not shown in the drawings), which is advantageously applied discontinuously (e.g., only in certain spots) over the surfaces being bonded, because this prevents excessive stiffness of the membrane 6, and in this way the wearing comfort of the glove is increased.

(Spec. 11.)

3. Athayde discloses “multilayer material useful for protective clothing. The material incorporates a thin-film composite membrane layer and a sorbent layer” (Athayde, col. 1, ll. 13-16).

4. Athayde notes that such protective clothing is useful in “hazardous conditions, where the potential or actual release of organic vapors and liquids poses a threat to the health and safety of the workforce. Gear currently used to safeguard workers in these surroundings consists of protective masks, hoods, clothing, gloves and footwear” (Athayde, col. 1, ll. 27-32).

5. Figure 2 of Athayde, reproduced below, shows an embodiment “in which the sorbent layer is coated onto the composite membrane layer” (Athayde, col. 3, ll. 51-53):

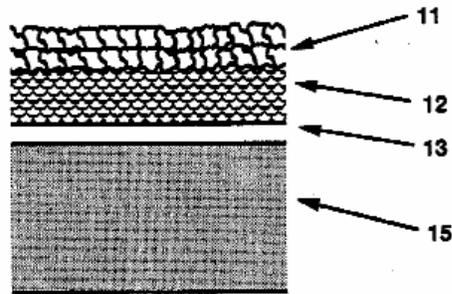


FIG. 2

The figure shows “fabric layer, 11, . . . coated with a microporous support membrane 12, which is overcoated with an ultrathin, permselective layer, 13. The sorbent layer, 15, is coated onto the thin-film composite membrane, instead of onto the fabric layer” (Athayde, col. 4, ll. 56-61). Athayde states that this “embodiment would be preferred if there is a requirement for a specific external fabric surface, e.g. uniforms, camouflage, etc. Putting the fabric surface outermost could also protect the permselective membrane from abrasion” (*id.* at col. 4, ll. 61-65).

6. Athayde discloses that its microporous support membrane can be made from a number of different polymers (Athayde, col. 8, ll. 32-59). Athayde discloses that the polymer is cast or coated onto the protective material’s fabric layer, for example, by the following process:

A casting solution, consisting of a solution of polymer in a water-miscible solvent, is doctored on to a moving belt of the fabric web. The belt then passes into a water bath which precipitates the polymer to form the membrane. The membrane passes through a spray-wash station and a water-rinse tank to remove any residual solvent before being dried and collected on a take-up roll.

(*Id.* at col. 8, l. 68, through col. 9, l. 7.)

7. Athayde does not disclose using an adhesive to fix the polymeric membrane to the fabric material.
8. Athayde discloses that “[t]he support membrane should be sufficiently thick to provide the membrane layer with a measure of robustness to withstand normal use, but not so thick as to impair the flexibility or permeability characteristics of the final material” (Athayde, col. 9, ll. 8-12).
9. Blücher discloses “[a] filter sheet material consisting of an air-permeable, pliable, especially textile support which is covered only partially with a uniformly distributed adhesive on which adsorber particles, especially active carbon beads, are fixed and the use of such filter materials containing active carbon as adsorbent for protective suits” (Blucher, abstract).
10. Blücher discloses that creating adsorptive sheets by coating the entire surface of a textile materials with a mixture of adhesive binder and active carbon can yield undesirable results because “binder is the cause of a reduction of the adsorption capacity, and in the case of textile materials, it always causes unwanted alterations in the pliability of the fabric due to cementing of the threads, which is a handicap especially in connection with garments (protective clothing)” (Blücher, col. 1, ll. 20-25).
11. Blücher discloses that the pliability issue can be addressed “by covering the support material only partially in a uniform distribution with an adhesive on which the adsorber particles are fixed” (Blücher, col. 1, ll. 44-46). Thus, the applied adhesive need “cover only 20 to 80%, especially 30 to 70%, of the surface of the support material. This partial application of the adhesive, which thus decidedly differs from a continuous coating, can be

achieved by applying the adhesive only to the prominences of a fabric serving as textile support material” (*id.* at col. 1, ll. 52-57).

PRINCIPLES OF LAW

“In proceedings before the Patent and Trademark Office, the Examiner bears the burden of establishing a *prima facie* case of obviousness based upon the prior art.” *In re Fritch*, 972 F.2d 1260, 1265 (Fed. Cir. 1992). “[O]bviousness requires a suggestion of all limitations in a claim.” *CFMT, Inc. v. Yieldup Intern. Corp.*, 349 F.3d 1333, 1342 (Fed. Cir. 2003) (citing *In re Royka*, 490 F.2d 981, 985 (CCPA 1974)).

Emphasizing a flexible approach to the obviousness question, the Supreme Court has nonetheless similarly noted that “it can be important to identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements *in the way the claimed new invention does* . . . because inventions in most, if not all, instances rely upon building blocks long since uncovered, and claimed discoveries almost of necessity will be combinations of what, in some sense, is already known.” *KSR Int’l Co. v. Teleflex Inc.*, 127 S. Ct. 1727, 1741 (2007) (emphasis added); *see also id.* at 1740-41 (requiring a determination of “whether there was an apparent reason to combine the known elements *in the fashion claimed* by the patent at issue”) (emphasis added).

ANALYSIS

Because we are not persuaded that the cited combination of references teaches or suggests all of the limitations in claim 1, we agree with Appellant that the Examiner has not made out a *prima facie* case of obviousness. Specifically, we agree with Appellant that the Examiner has not shown that

the cited references teach or suggest claim 1's limitation of "a second support layer . . . being joined to said membrane by a discontinuously applied adhesive so that said membrane is supported and stabilized by said second support layer."

We agree with the Examiner that Athayde's fabric layer 11 is joined to the microporous membrane support 12 (*see* FF 5). However, rather than disclosing that its membrane is fixed onto the fabric layer using an adhesive, Athayde instead discloses that the membrane is a polymeric coating that is cast directly onto the fabric without an adhesive (*see* FF 5-7). Moreover, Athayde discloses that the membrane is thin enough so as to not "impair the flexibility . . . characteristics of the final material" (Athayde, col. 9, ll. 11-12) (FF 8).

Thus, even assuming for argument's sake that Blücher may have suggested using a discontinuously applied adhesive to fix laminated sheets to each other, the protective material disclosed by Athayde uses a membrane layer that does not require any adhesive, much less an adhesive that would cause the final material to lose flexibility or pliability. Therefore, because Athayde's membrane layer does not require an adhesive to join it to the fabric layer, we do not agree with the Examiner that one of ordinary skill in the art would have been prompted by Blücher to have used a discontinuously applied adhesive to join Athayde's membrane layer to its adjacent fabric layer. Moreover, we do not see, and the Examiner does not point to, any disclosure in Williams or Farnworth that remedies this deficiency in Athayde and Blücher.

Because we do not agree with the Examiner that the cited combination of references would have taught or suggested all of the limitations of claim 1, we reverse the Examiner's obviousness rejection of claim 1, and its dependent claims 2, 7-10, 15-17, 20-26, 28, 29, 33, 35-38, 42, and 43.

As discussed above, like claim 1, claims 44-46 recite protective handwear with "a second support layer . . . being joined to said membrane by a discontinuously applied adhesive so that said membrane is supported and stabilized by said second support layer." Because the combination of Athayde, Williams, Farnworth, and Blücher fails to teach or suggest that limitation, we reverse the Examiner's obviousness rejection with respect to those claims as well.

OBVIOUSNESS -- DEPENDENT CLAIMS

The Examiner has entered a number of obviousness rejections over claims dependent on claim 1, applying a number references in addition to Athayde, Williams, Farnworth, and Blücher, to teach the limitations present in the dependent claims (*see* Ans. 7-11). However, each of the rejected claims depends from claim 1 and requires the protective handwear to have "a second support layer . . . being joined to said membrane by a discontinuously applied adhesive so that said membrane is supported and stabilized by said second support layer."

In reviewing these rejections and the cited references we do not see, and the Examiner does not point to, anything in the prior art applied to the dependent claims that remedies the failure of Athayde, Williams, Farnworth, and Blücher to meet that limitation. We, therefore, reverse the Examiner's remaining obviousness rejections as well.

SUMMARY

We reverse the Examiner's rejection of claims 1, 2, 7-10, 15-17, 20-26, 28, 29, 33, 35-38, and 42-46 under 35 U.S.C. § 103(a) as being unpatentable over Athayde, Williams, Farnworth, and Blücher.

We reverse the Examiner's rejection of claims 5, 12-14, and 34 under 35 U.S.C. § 103(a) as being unpatentable over Athayde, Williams, Farnworth, Blücher, and Baurmeister.

We reverse the Examiner's rejection of claim 18 under 35 U.S.C. § 103(a) as being unpatentable over Athayde, Williams, Farnworth, Blücher, and Giglia.

We reverse the Examiner's rejection of claim 19 under 35 U.S.C. § 103(a) as being unpatentable over Athayde, Williams, Farnworth, Blücher, and Ainsworth.

We reverse the Examiner's rejection of claim 27 under 35 U.S.C. § 103(a) as being unpatentable over Athayde, Williams, Farnworth, Blücher, and Kelly.

We reverse the Examiner's rejection of claims 30-32 under 35 U.S.C. § 103(a) as being unpatentable over Athayde, Williams, Farnworth, Blücher, and Walker.

We reverse the Examiner's rejection of claim 39 under 35 U.S.C. § 103(a) as being unpatentable over Athayde, Williams, Farnworth, Blücher, and Ramkumar.

We reverse the Examiner's rejection of claim 40 under 35 U.S.C. § 103(a) as being unpatentable over Athayde, Williams, Farnworth, Blücher, Ramkumar, and Hu.

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We reverse the Examiner's rejection of claim 41 under 35 U.S.C. § 103(a) as being unpatentable over Athayde, Williams, Farnworth, Blücher, and Plotzker.

REVERSED

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