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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte KLAUS SZUKAT

Appeal 2019-000576
Application 14/123,528
Technology Center 1700

Before ROMULO H. DELMENDO, MARK NAGUMO, and
JAMES C. HOUSEL, *Administrative Patent Judges*.

DELMENDO, *Administrative Patent Judge*.

DECISION ON APPEAL

Pursuant to 35 U.S.C. § 134(a), the Appellant¹ appeals from the Primary Examiner’s final decision to reject claims 1, 3–8, 10–14, and 16.² We have jurisdiction under 35 U.S.C. § 6(b).

We affirm in part.

¹ We use the word “Appellant” to refer to “applicant” as defined in 37 C.F.R. § 1.42 and as listed in the Application Data Sheet filed December 3, 2013—namely, Klaus Szukat, who is the Inventor. Two individual persons—Klaus Szukat and Fritz Sholten—are identified as the real parties in interest (Appeal Brief filed May 5, 2018 (“Appeal Br.”) at 3).

² See Appeal Br. 4–13; Examiner’s Answer entered July 27, 2018 (“Ans.”) at 3–11; Final Office Action entered September 7, 2017 (“Final Act.”) at 2–6.

I. BACKGROUND

The subject matter on appeal relates to a multilayer laid scrim for sheet-like or 3-dimensional high-strength components (Substitute Specification filed December 3, 2013 (“Spec.”) at 1, ll. 10–12). The Specification states that the claimed scrim includes structural reinforcement elements embedded in at least certain areas (i.e., areas subject to stress) in at least one layer or between layers to avoid certain known drawbacks of the prior art (e.g., the laid structure having a tendency to be ripped open depending on thickness) and to prevent fanning of the laid fibers (Spec. 4, ll. 8–17; 6, ll. 18–22).

Figure 5 (annotated) is illustrative and is reproduced from the Drawings filed December 3, 2013, as follows:

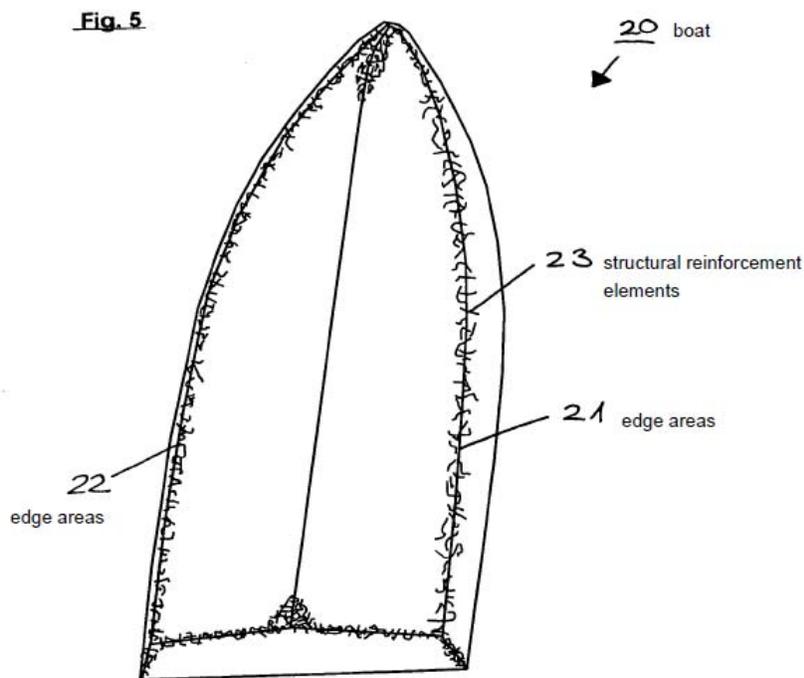


Figure 5 above depicts a boat **20**'s bottom made of unidirectional (UD) and multiaxial (MD) scrim with structural reinforcement elements **23** provided in edge areas **21** (Spec. 1, ll. 16–17; 10, l. 10; 11, l. 24–12, l. 3).³

Representative claim 1 is reproduced from the Claims Appendix to the Appeal Brief, as follows:

1. Multilayer laid scrim comprising a structure made of several layers of glass fibers, synthetic fibers, aramid fibers and/or carbon fibers, characterized in that *sprayed-on self-adhesive structural reinforcement elements (2, 6, 11, 16, 23) without orientation exist between at least two layers*, wherein there is *selective control of the percentage share of fibers in a coating volume so that stressed areas of the multilayer laid scrim have a higher percentage of fiber content*.

(Appeal Br. 14 (emphases added)).

II. REJECTION ON APPEAL

Claims stand rejected under pre-AIA 35 U.S.C. § 103(a) as unpatentable over Tsotsis,⁴ Beraud et al.⁵ (“Beraud”), Mathieu,⁶ and Gabrisch⁷ (Ans. 3–11; Final Act. 2–6).

³ The occurrences of “boot” in describing the boat shown in Figure 5 appear to be translation errors. These errors should be corrected in the event of further prosecution.

⁴ US 2005/0257887 A1, published November 24, 2005.

⁵ US 2012/0237707 A1, published September 20, 2012.

⁶ US 6,187,409 B1, issued February 13, 2001.

⁷ US 5,972,810, issued October 26, 1999.

III. DISCUSSION

The Appellant provides substantive arguments under separate sub-headings for claims 1 and 5 only (Appeal Br. 4–13). As for claims 3, 4, 6–8, 10–14, and 16, the Appellant relies on the arguments presented in support of claim 1 (*id.* at 12–13). Therefore, we decide this appeal on the basis of claims 1 and 5, with dependent claims 3, 4, 6–8, 10–14, and 16 standing or falling with either claim 1 or 5. *See* 37 C.F.R. § 41.37(c)(1)(iv).

Claim 1

1. The Examiner’s Position

With respect to claim 1, the Examiner finds that Tsotsis describes a multi-layered structure comprising a plurality of fibrous layers and veils of structural reinforcement elements provided between the fibrous layers (Ans. 3). The Examiner finds that “[t]he structure is stable and the amount of the reinforcements can be selected to provide stability and strength to the structure, which equates to the percentage share of fibers being controlled” (*id.* at 4).

Regarding the “sprayed-on” limitation, the Examiner explains that although Tsotsis does not explicitly teach that the structural reinforcement elements are formed by spraying, the patentability of the claimed product depends on the product itself—not on its method of production—and, therefore, the burden of production was shifted to the Appellant to come forward with evidence establishing an unobvious difference between the claimed product and the prior art product (*id.* (relying on *In re Thorpe*, 777 F.2d 695, 697 (Fed. Cir. 1985))).

Regarding the requirement that the structural reinforcement elements are sprayed on “without orientation” as recited in claim 1, the Examiner

finds that Tsotsis does not explicitly teach that the veils are random but relies on Beraud to explain Tsotsis's teachings (Ans. 5). Specifically, the Examiner finds that Beraud teaches that the term "veil" is a term of art that defines a nonwoven *random* structure for the fibers (*id.*).

Regarding the requirement that "stressed areas of the multilayer laid scrim have a higher percentage of fiber content" as recited in claim 1, the Examiner finds that Mathieu teaches that scrims can be reinforced by providing additional random nonwoven fibers in certain areas such as edges to provide reinforced edges (*id.*). The Examiner concludes that, therefore, "it would have been obvious to have provided the veils at those discrete locations of Tsotsis where additional reinforcement was desired" (*id.*).

Regarding the "self-adhesive" limitation, the Examiner finds that Gabrisch teaches using self-adhesive auxiliary fibrous reinforcing layers to reinforce composite materials (*id.* at 5–6). The Examiner concludes that, "[t]herefore, it would have been obvious to one of ordinary skill in the art . . . to have employed a self-adhesive veil or reinforcing fibrous elements as taught by Gabrisch in order to eliminate the need for additional adhesives" (*id.* at 6).

2. *The Appellant's Contentions*

The Appellant contends that Tsotsis discloses multiple fiber layers and veils but not the limitations highlighted above in reproduced claim 1 (Appeal Br. 5). The Appellant urges that the claimed product is "substantially different" from the product disclosed in Tsotsis in that the stressed areas will have greater amounts of fiber content, resulting in a superior product, and "[t]here is also selective control of the fiber content throughout the entire product (and not just at edges)" (*id.* at 6). The

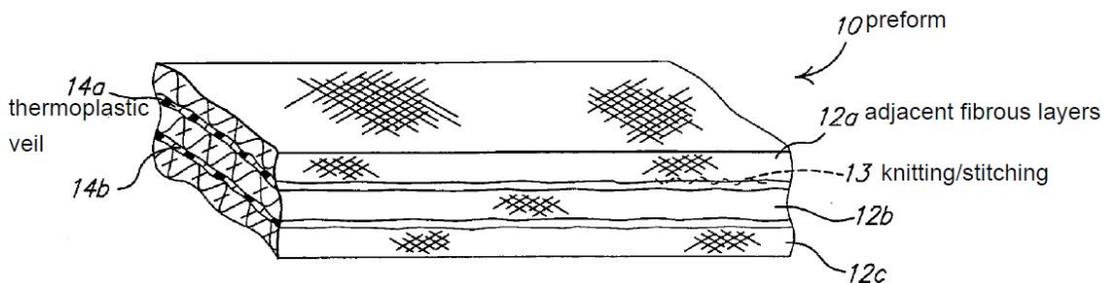
Appellant argues that “the spraying process enables more precise stress protection” and that the “reinforcement is more economically and effectively distributed in the product” (*id.*). Regarding the “secondary” references, the Appellant argues that the reasons in support of their combination with Tsotsis are merely conclusory and do not address the differences urged by the Appellant (*id.* at 7–9). In the Appellant’s view, the Examiner’s rejection is based on hindsight (*id.* at 9–10). Furthermore, the Appellant alleges that surprising and unexpected results are achieved (*id.* at 5, 10).

3. *Opinion*

The Appellant’s arguments fail to identify reversible error in the Examiner’s rejection. *In re Jung*, 637 F.3d 1356, 1365 (Fed. Cir. 2011).

Tsotsis describes a fiber preform having a nonwoven, thermoplastic interlayer or veil between at least a pair of fibrous layers (Tsotsis ¶ 4).

Tsotsis’s Figure 1 (annotated) is illustrative and is reproduced as follows:



Tsotsis’s Figure 1 above depicts a highly enlarged, cross-sectional view of a portion of a preform comprising a plurality of fibrous layers **12a**, **12b**, and **12c** and thermoplastic veils **14a** and **14b** disposed between the fibrous layers (*id.* ¶¶ 13–14).

Tsotsis teaches that the thermoplastic veils **14** are integrated into the fibrous layers **12** during production of the preform by melt-bonding, knitting (i.e., stitching), or other mechanical means (*id.* ¶ 13). Tsotsis further teaches

that the nonwoven thermoplastic veils **14** become tacky when heated, which is consistent with the Appellant’s written description for self-adhesivity (Spec. 9, ll. 7–9), and adhere adjacent fibrous layers **12** to one another to prevent their movement (*id.* ¶¶ 4, 14). In addition, Tsotsis teaches that the thermoplastic veils **14** act as toughening layers to impart significant additional impact damage resistance to composite structures using the multi-layered fibrous preform and that the thickness (i.e., weight) of the veils may be varied to provide a greater or lesser degree of impact damage tolerance to better suit the needs of specific applications and parts (*id.* ¶¶ 5, 15).

Although Tsotsis does not say that Tsotsis’s veils **14** are made up of “sprayed-on self-adhesive structural reinforcement elements . . . without orientation” as required by claim 1, we do not agree with the Appellant that these limitations serve to patentably distinguish the claimed product over Tsotsis’s product. As the Examiner explains (Ans. 4, 6), the patentability of a product depends on the product itself—not by its method of production. Tsotsis does not mention spraying, but Tsotsis’s final product appears to be the same or substantially as the claimed product after the veils **14** are integrated into the preform such as by melt-bonding (Tsotsis ¶¶ 13–15). In this regard, the current Specification states that the structural reinforcement elements (random fibers) may be sprayed with a selected liquid or powder-type material or, *alternatively*, “designed in such a way that they undergo a heating process, e.g.[,] during the pressing with a heatable stamp, and dissolve in the resinification” (Spec. 7, l. 20–8, l. 3). Thus, it would reasonably appear that the claimed product would be indistinguishable from Tsotsis’s product. Other than attorney argument, the Appellant does not direct us to any persuasive evidence that would reasonably establish that

spraying would result in a structurally and patentably different product as compared to a different technique of integration (e.g., melt-bonding) as disclosed in Tsotsis or the current Specification. *Thorpe*, 777 F.2d at 697.

As for the “without orientation” (random) limitation, Beraud teaches that “[t]he term ‘nonwoven’, also known as a ‘veil’, conventionally means an assembly of continuous or short fibers disposed in a random manner” and that the veils may be heated to exploit their hot tack nature (Beraud ¶ 35). Tsotsis’s disclosure regarding nonwoven thermoplastic veils is consistent with the art-accepted definition for “nonwoven” or “veil” as disclosed in Beraud, and, therefore, Tsotsis’s fibers making up the veils would reasonably appear to be made of an assembly of continuous or short fibers disposed in a random manner or “without orientation,” as required by claim 1. The Appellant does not direct us to contrary evidence.

Regarding “selective control of the percentage share of fibers in a coating volume so that stressed areas of the multilayer laid scrim have a higher percentage of fiber content” as recited in claim 1, we observe that claim 1 fails to recite any specific structural dimensional limitations for the claimed scrim, let alone specific areas of the scrim on which the structural reinforcement elements are sprayed. Nor does claim 1 recite any composite structure that incorporates the claimed scrim. Thus, contrary to the Appellant’s belief and consistent with the Examiner’s position (Ans. 8), providing structural reinforcement elements on any part of a composite material, including the edges, would meet claim 1. As we found above, Tsotsis teaches that the thicknesses of the thermoplastic veils may be varied to provide a greater or lesser degree of impact damage tolerance to better suit the needs of specific applications and parts (Tsotsis ¶ 4). This teaching

would have suggested to a person having ordinary skill in the art to provide thermoplastic veils in certain areas of the preform (scrim) as needed or suited for the final composite part that is to be fabricated.

As for the Appellant's arguments pertaining to surprising or unexpected results, these arguments are without merit. As the Examiner points out (Ans. 10), the Appellant does not offer any objective evidence (e.g., comparative experimental data) to support the allegation, much less establish that the evidence of unexpected results is commensurate with the broad scope of claim 1. *In re Geisler*, 116 F.3d 1465, 1470 (Fed. Cir. 1997).

For these reasons, we uphold the Examiner's rejection of claim 1.

Claim 5

We reach a different result for claim 5. Claim 5, which depends from claim 1, recites that "the individual layers having draping zones, said draping zones being created at the ends of the individual layers via pressing in an appropriate mold, with structural reinforcement elements arranged in the area of the draping zones" (Appeal Br. 14).

The Appellant argues that "draping zones" as recited in claim 5 include "a back and forth arrangement of the layers not unlike that of well-known drapes in a house" and that such "draping zones" are not shown in the applied prior art references (*id.* at 11). We agree.

The current Specification defines "draping" in the context of the invention "to mean that the *individual scrims* are pressed into an appropriate mold to manufacture *multi-edge components*, for instance" (Spec. 5, ll. 11–13 (emphases added)). Hence, the Examiner's findings that the "Appellant does not define the draping zones other than that they are the ends of the individual layers, which the action equates with the edges" and that "[t]he

end of a layer is per se the edge of that layer” lack support and, therefore, constitute reversible errors (Ans. 10).

For these reasons, we do not sustain the rejection of claim 5 and claims dependent therefrom.

IV. CONCLUSION

In summary:

| Claims Rejected | 35 U.S.C. § | Evidentiary Basis | Affirmed | Reversed |
|------------------------|--------------------|--|----------------------------------|-----------------|
| 1, 3–8, 10–14, and 16 | 103(a) | Tsotsis, Beraud, Mathieu, and Gabrisch | 1, 3, 4, 6–8, 10, 13, 14, and 16 | 5, 11, and 12 |

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 IN PART