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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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*Ex parte* AMITAVA DATTA

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Appeal 2010-006425  
Application 11/121,872  
Technology Center 3600

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Before LINDA E. HORNER, JOHN W. MORRISON, and  
WILLIAM A. CAPP, *Administrative Patent Judges*.

HORNER, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

Amitava Datta (Appellant) seeks our review under 35 U.S.C. § 134 of the Examiner's decision rejecting claims 1, 6-9, 11, 12, 16-19, 21, and 23-34, which are all of the pending claims. We have jurisdiction under 35 U.S.C. § 6(b).

We AFFIRM.

## THE INVENTION

Appellant's claimed invention "relates generally to non-metallic brush seals for sealing a gap between a high pressure and a lower pressure area." Spec. 2, ll. 7-8. Claim 1, reproduced below, is illustrative of the subject matter on appeal.

1. A non[-]metallic brush seal comprising:

a plurality of non-metallic bristles having a length, the bristles being twisted together substantially about their length such that the bristles overlap each other;

a support member constructed and arranged to support the bristles in the twisted configuration;

wherein the plurality of non-metallic bristles forms a fiber pack, the non-metallic bristles being inclined at about 90° relative to a longitudinal axis of the support member, and

wherein the support member comprises a metallic front plate and a metallic back plate which are constructed and arranged to elastically return the fiber pack from a displaced position to an original position in a spring back manner following displacement of the fiber pack;

wherein the metallic front plate defines a set of slots extending from an inner diameter side toward an outer diameter side of the metallic front plate to divide the metallic front plate into multiple flexible front plate segments; and

wherein the metallic back plate defines a set of slots extending from an inner diameter side toward an outer diameter side of the metallic back plate to divide the metallic back plate into multiple flexible back plate segments;

wherein the plurality of non-metallic bristles includes multiple braids, each braid including a first fiber and a second fiber which are wound together to form that braid;

wherein the multiple braids form a fiber strip; and

wherein the support member is constructed and arranged to mount to a base and to orient the fiber strip in an axially inclined position relative to the base.

#### THE EVIDENCE

The Examiner relies upon the following evidence:

Steinetz	US 5,076,590	Dec. 31, 1991
Flower	US 5,090,710	Feb. 25, 1992
Tseng	US 5,568,931	Oct. 29, 1996
Wright	US 6,308,957 B1	Oct. 30, 2001

Appellant's Admitted Prior Art (AAPA), Fig. 1 and Spec. 5, l. 7 and Spec. 6, ll. 26-28.

#### THE REJECTIONS

Appellant seeks review of the following rejections:

1. Claims 1, 6-9, 11, 12, 16-19, 21, and 23-29 are rejected under 35 U.S.C. § 103(a) as being unpatentable over AAPA, Wright, Steinetz, and Flower.
2. Claims 1, 6-9, 11, 12, 16-19, 21, and 23-34 are rejected under 35 U.S.C. § 103(a) as being unpatentable over AAPA, Tseng, Wright, Flower, and Steinetz.

#### ISSUES

Appellant argues the claims subject to each ground of rejection as a group. Br. 10-23 (arguing the claims subject to the first ground of rejection as a group) and Br. 23-31 (arguing the claims subject to the second ground of rejection as a group). We select claim 1 as the representative claim for each ground of rejection. *See* 37 C.F.R. § 41.37(c)(1)(vii) (2011).

The Examiner found that Appellant's Specification discloses a known brush seal in which the bristles are inclined at about 90° to the axis of the support member. Ans. 3, 5. The Examiner determined that it would have

been obvious to add the front and back plates taught by Wright (first ground of rejection) or Wright in combination with Tseng (second ground of rejection) to the known brush seal of the AAPA, to use the braided non-metallic fiber strands of Steinetz in the known brush seal of the AAPA, and to modify the support member in the known brush seal such that the bristles are axially inclined as taught by Flower. Ans. 3-6.

Appellant argues the Examiner erred in rejecting the claims under both grounds of rejection because: (1) the combination of prior art “does not teach a non[-]metallic brush seal having a plurality of non-metallic bristles, ‘the plurality of non-metallic bristles forms a fiber pack, the non-metallic bristles being inclined at about 90° relative to a longitudinal axis of the support member,’ as claimed by Applicant” (Br. 12 (argument 1a), *id.* at 25 (argument 2a)); (2) there is no motivation to combine the prior art to produce a non-metallic brush seal having “a plurality of non-metallic bristles” (Br. 20 (argument 1c), *id.* at 27 (argument 2b)); and (3) there is no motivation to combine the prior art to produce a non-metallic brush sealing having a support member comprising metallic front and back plates which are constructed and arranged to elastically return the fiber pack from a displaced position to an original position in a spring back manner following displacement of the fiber pack (Br. 15 (argument 1b), *id.* at 29 (argument 2c)).

The issue presented by this appeal is:

Does the combination of prior art teach a non-metallic brush seal as called for in claim 1?

Did the Examiner articulate adequate reasoning based on rational underpinnings to explain why one of ordinary skill in the art would have been led to combine the prior art in the manner claimed?

#### ANALYSIS

With regard to Appellant's arguments 1a and 2a, we agree with the Examiner that Appellant's Specification discloses "a known brush seal comprising a plurality of bristles twisted about their length such that the bristles are inclined at about 90 degrees with respect to a support member 14/16 and are normal to the rotor surface." Ans. 3. *See also* Ans. 5; Spec. 5, l. 7; Spec. 6, ll. 26-28; fig. 1. *See also* Br. 6 (Appellant citing prior art Figure 1 and Spec. 6, l. 27 for support for limitation of claim 1 calling for the non-metallic bristles 12 being inclined at about 90° relative to a longitudinal axis of the support member 16). We further find that the Examiner adequately addressed Appellant's arguments 1a and 2a in the Examiner's Answer. Ans. 6-7 and 9-10. As such, we adopt the Examiner's findings and reasoning as our own.

With regard to Appellant's arguments 1c and 2b, we agree with the Examiner's findings as to the scope and content of Steinetz (Ans. 4-6), which is relied upon to teach the use of non-metallic fibers. We find the Examiner's reasoning for modifying the fibers of the AAPA brush seal to make them non-metallic so as to withstand wear and be useable in high temperature environments (Ans. 4-6, 9-10) is based directly on the teachings in Steinetz and is based on rational underpinnings. We further find that the Examiner adequately addressed Appellant's arguments 1c and 2b in the Examiner's Answer. Ans. 9-10. As such, we adopt the Examiner's findings and reasoning as our own.

With regard to Appellant's arguments 1b and 2c, we agree with the Examiner's findings as to the scope and content of Wright and Tseng (Ans. 3, 5), which are relied upon to teach the claimed metallic front and back plates. We find the Examiner's reasons for modifying the AAPA brush seal to include the claimed metallic front and back plates for an evenly distributed pressure differential and to help improve sealing performance, as taught by Wright, and to reduce chamfering and vibration to improve the efficiency and life of the brush seal, as taught by Tseng, (Ans. 3, 5) are based directly on the teachings in Wright and Tseng and are based on rational underpinnings. We further find that the Examiner adequately addressed Appellant's arguments 1b and 2c in the Examiner's Answer. Ans. 8-11. In particular, we find that the Examiner's determination (Ans. 11) that the slotted plates of both Tseng and Wright, which appear to be substantially similar structurally to the claimed metallic plates, would function as called for in claim 1 is based on sound reasoning. Appellant has not met his burden to show that the prior art structures do not possess this functionality as an inherent characteristic. *See In re Swinehart*, 439 F.2d 210, 213 (CCPA 1971) ("where the Patent Office has reason to believe that a functional limitation asserted to be critical for establishing novelty in the claimed subject matter may, in fact, be an inherent characteristic of the prior art, it possesses the authority to require the applicant to prove that the subject matter shown to be in the prior art does not possess the characteristic relied on"). As such, we adopt the Examiner's findings and reasoning as our own.

#### CONCLUSIONS

The combination of prior art teaches a non-metallic brush seal as called for in claim 1.

Appeal 2010-006425  
Application 11/121,872

The Examiner articulated adequate reasoning based on rational underpinnings to explain why one of ordinary skill in the art would have been led to combine the prior art in the manner claimed.

**DECISION**

The decision of the Examiner to reject claims 1, 6-9, 11, 12, 16-19, 21, and 23-34 is AFFIRMED.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a). *See* 37 C.F.R. § 1.136(a)(1)(iv).

**AFFIRMED**

Klh