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Steven C. Tietsworth 3855 Ruffin Road San Diego, CA 92123			TORRENTE, RICHARD T	
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tietsworth@cox.net
steven.tietsworth@seescan.com
susan.hammons@seescan.com

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte ERIC M. CHAPMAN, MARK S. OLSSON,
NICHOLAS A. SMITH, and ALEXANDER L. WARREN

Appeal 2018-005905
Application 14/136,104
Technology Center 2400

Before DENISE M. POTHIER, LINZY T. MCCARTNEY, and BETH Z.
SHAW, *Administrative Patent Judges*.

SHAW, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF CASE

Appellants appeal under 35 U.S.C. § 134 from a rejection of claims 1, 3, 8, 9, and 11–23. Claims 4–7 and 10 have been canceled. We have jurisdiction under 35 U.S.C. § 6(b).

We reverse.

CLAIMS

The claims are directed to a rotating contact assemblies for self-leveling camera heads. Spec. ¶ 2. Claim 1, reproduced below, is illustrative of the claimed subject matter, with disputed elements italicized:

1. A camera head, comprising:
 - a cylindrical housing;
 - an imager disposed within the housing on a first element movable relative to the housing;
 - a second element rotationally movable relative to the first element, the second element including an electrical output connection; and
 - a slip ring coupled between the first element and the second element to provide an electrical connection between an output of the imager and the electrical output connection, wherein the slip ring comprises:
 - a cylindrical rotor assembly including a plurality of electrical contacts disposed circumferentially thereon; and
 - a stator assembly disposed in flexion around the cylindrical rotor assembly, the stator assembly including one or more *printed circuit board brush elements* having electrical contacts thereon, *where the electrical contacts are electrical circuit traces on the one or more printed circuit board brush elements* for providing electrical coupling to corresponding rotor assembly electrical contacts and where the brush element electrical contacts are held in contact with corresponding ones of the one or more ring electrical contacts through the flexion of the stator assembly.

REFERENCES

The prior art relied upon by the Examiner in rejecting the claims on appeal is:

Iwaki	US 4,384,225	May 17, 1983
Angerpointner	US 2005/0012426 A1	Jan. 20, 2005
Olsson	US 2005/0275725 A1	Dec. 15, 2005

Wrosch	US 2008/0207814 A1	Aug. 28, 2008
Taruta	US 2008/0290755 A1	Nov. 27, 2008
Kereth	US 2010/0132804 A1	June 3, 2010
Tokuhara	US 2010/0233506 A1	Sept. 16, 2010

REJECTIONS

The Examiner made the following rejections:

Claims 1–3, 9, 11, 15, 18–19, 22, and 23 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Olsson¹ and Angerpointner.

Claim 8 is rejected under § 35 U.S.C. 103(a) as being unpatentable over Olsson, Angerpointner in view of Tokuhara.

Claims 12–14 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Olsson, Angerpointner, and Iwaki.

Claim 16 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Olsson, Angerpointner, and Wrosch.

Claim 17 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Olsson, Angerpointner, and Kereth.

Claim 20 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Olsson, Angerpointner, and Taruta.

Claim 21 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Olsson, Angerpointner and Volpert et al., *A Fluxless Bonding Process using AuSn or Indium for a Miniaturized Hermetic Package*, Electronic Components and Tech. Conf. 224–231 (2009) (“Volpert”).

¹ Appellants note that Olsson shares an inventor, Mark S. Olsson, with the present application. App. Br. 5.

CONTENTIONS AND ANALYSIS

Appellants note that its new brushes are recited in claim 1 as “one or more printed circuit board brush elements having electrical contacts thereon” where “the electrical contacts are electrical circuit traces on the . . . printed circuit board brush elements.” App. Br. 7. Appellants argue the Examiner erred in rejecting claim 1 under 35 U.S.C. § 103 as being unpatentable over the combination of Olsson and Angerpointner. In particular, Appellants argue that in their invention, “instead of a round wire brush as in [Appellants’ prior invention] Olsson, the new brush design is a printed circuit board with traces on it, where the traces themselves provide the electrical connection to corresponding conductors on a corresponding rotor.” *Id.*

Figure 29 of the Specification is reproduced below.

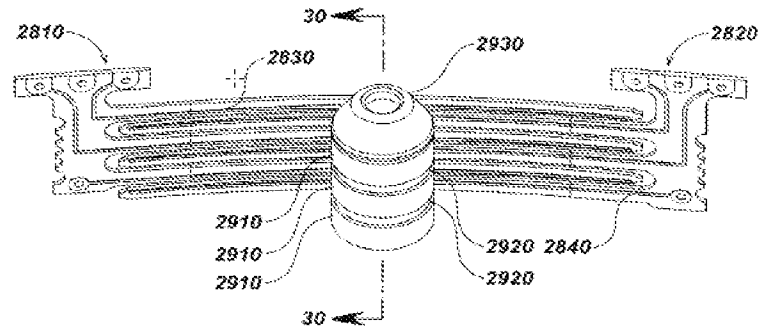


FIG. 29

Figure 29 illustrates a printed circuit board (“PCB”) brush assembly (e.g., 2810 and 2820) in an assembly with a corresponding rotor element 2930, with electrical traces on the PCB brushes (e.g., 2830 and 2840) in contact with corresponding conductors 2910 on the rotor to transfer electrical signals representing images or video between an imager of the camera head and a connector to an associated push-cable. The PCB brushes are retained in flexion to the brushes, with the flexion inherently provided via the mechanical properties of the PCB substrate. Spec. ¶ 111.

According to Appellants, the brush elements of Olsson are conductive round cross-sectional wires. App. Br. 6. The Examiner does not dispute that

Olsson discloses wires and does not disclose a printed circuit board brush element, but relies on Angerpointner to teach the claimed printed circuit board brush element. Final Act. 3; Ans. 11–12. Appellants argue that Angerpointner, like Olsson, also uses a wire brush element, and not a PCB brush element as claimed. App. Br. 11. Angerpointner's Figure 5 is reproduced below.

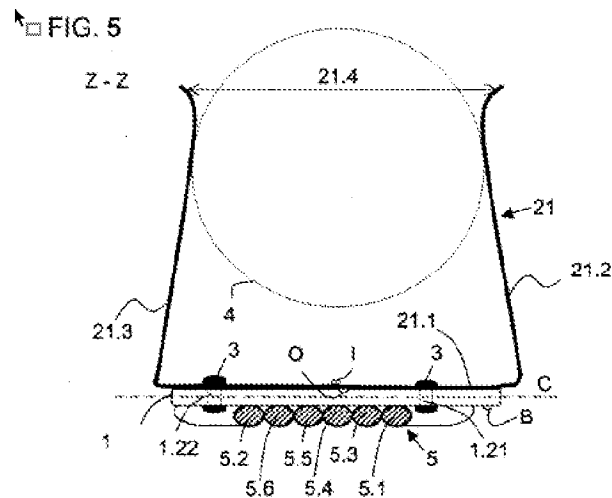


Figure 5 of Angerpointner shows that electrical contact is made between a wire brush 21, not a PCB brush as claimed, and a rotating element shown as a circle in the middle of Figure 5. *See Angerpointner, Abstract, ¶¶ 10, 33, 35.* Based on the record, we agree with Appellants that Angerpointner teaches a printed circuit board 1 (Angerpointner ¶ 31), and a separate contact wire 21 (Angerpointner ¶ 33, 35), where the electrical contacts are made by the wire and not by traces on the PCB, as required by the claims. *See Angerpointner ¶ 10.*

Thus, we are persuaded of error in the Examiner's rejection of claim 1 under 35 U.S.C. § 103, and we do not sustain the § 103 rejection of claim 1.

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For the same reasons, we do not sustain the § 103 rejection of independent claim 22, as well as the pending dependent claims 2, 3, 9, 11, 15, 18, 19, and 23. Nor do we sustain the rejections of the remaining pending dependent claims because the Examiner does not find the other cited references cure the deficiencies of Olsson and Angerpointner discussed above.

DECISION

We reverse the Examiner's rejections of claims 1, 3, 8, 9, and 11–23 under 35 U.S.C. § 103.

REVERSED