

The opinion in support of the decision being entered today was *not* written for publication and is *not* binding precedent of the Board.

Paper No. 23

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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Ex parte MASATO ONO

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Appeal No. 1997-1592  
Application No. 08/325,566<sup>1</sup>

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HEARD: October 12, 2000

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Before GARRIS, LIEBERMAN, and TIERNEY, Administrative Patent Judges.

TIERNEY, Administrative Patent Judge.

*Decision on Appeal*

This is an appeal under 35 U.S.C. §134 from the examiner's refusal to allow claims 5, 6 and 8-13. We reverse.

*The Invention*

The invention relates to a charging member for an electrophotographic apparatus. (Specification, p. 1). As described in appellant's specification, "an electrically conductive member to

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<sup>1</sup>Application for patent filed on October 19, 1994. The real party in interest is Fuji Xerox Company, Ltd.

be incorporated in a charging member for charging an electrophotographic photoreceptor is required to exhibit an electrical conductivity of  $10^3$  to  $10^9$  [ohms] as calculated in terms of resistivity.”

(Specification, p. 1).

In general, a conductive member is provided on a metallic shaft and its external surface acts an electrically conductive layer. (Specification, p. 1). For example, the charging member can be charged and brought into contact with a drum-shaped photoreceptor such that the surface of photoreceptor becomes uniformly charged. (Specification, pages 7-8 and Fig. 3). A latent image may then be formed on the surface of the photoreceptor and this latent image may be developed by a means of development. (Specification, p. 8).

A copy of the claims under appeal is set forth in the appendix to the Appellant’s Brief.

Independent claim 5 is illustrative of the invention and reads as follows:

5. An electrophotographic charging member, which comprises a porous anodized aluminum film formed by anodically oxidizing a support the surface of which comprises aluminum or aluminum alloy and a surface protective layer on the surface of said porous anodized aluminum film, said surface protective layer having dispersed therein electrically conductive fine particles having a particle size of not greater than 5 Fm.

#### *The References*

The prior art references of record relied upon by the examiner and the appellant’s are:

Aizawa et al. (Aizawa)	4,430,410	Feb. 7, 1984
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Kirk-Othmer Encyclopedia of Chemical Technology, 3rd ed., Vol. 4, John Wiley & Sons, Inc., 1978, pp. 631-666.

Van Nostrand Reinhold's Scientific Encyclopedia, 6th ed., 1983, p. 523.

Aizawa, the Kirk-Othmer Encyclopedia and the Van Nostrand Encyclopedia are available as prior art under 35 U.S.C. § 102(b).

*References Cited by the Board of Patent Appeals and Interferences*

The references cited by the Board are as follows:

Pengilly ('004)	4,408,004	Oct. 4, 1983
Pengilly ('272)	4,476,272	Oct. 9, 1984
Pengilly ('118)	4,535,118	Aug. 13, 1985
Hirayama et al. (Hirayama)	5,782,968	Jul. 21, 1998

The Pengilly '004, '272 and '118 patents are available as prior art under 35 U.S.C. §102(b).

Hirayama, which issued from a U.S. application filed on Dec. 4, 1996, is not available as prior art. The Pengilly patents and Hirayama are made of record and are cited on the attached PTO-892.

*The Rejection*

(1) Claims 5, 6 and 8-13 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Aizawa.

*The Aizawa Reference*

Aizawa describes a method and apparatus for developing latent electrostatic images formed on the surface of an image bearing material. (Abstract). In particular, the method involves magnetically retaining a relatively conductive one-component developer on the surface of a developer-retaining member and contacting the developer with the surface of an image-bearing material which has formed thereon a latent electrostatic image. (Col. 4, lines 19-29). The developer-retaining member is formed of a stationary sleeve disposed so that its surface approaches the surface of a photosensitive material in a developing zone. (Col. 5, lines 27-30 and Fig. 1). Aizawa describes the resistance of the developer-retaining member as preferably ranging from  $5 \times 10^7$  ohms to  $5 \times 10^8$  ohms. (Col. 6, lines 34-42 and col. 9, lines 25-30). This resistance can be achieved by forming a synthetic resin surface layer containing carbon black particles dispersed therein on an insulating coating of the sleeve or by forming the synthetic resin layer directly on the conductive main body of the sleeve. (Col. 9, lines 30-35).

In example 1 of Aizawa, five sleeves were provided each of which consisted of a main body of aluminum and an aluminum oxide layer formed on the main body by anodization. (Col. 9, lines 53-55). The surface of each of the sleeves was uniformly coated with a viscous composition which comprised carbon black powder ("Special Black No. 4," a product of DeGussa Corporation), an oil-soluble dye, tetrahydrofuran and a vinyl chloride copolymer.

(Col. 9, line 55 to col. 10, line 20). These sleeves were then used as developer-retaining members in a developing device. (Col. 10, lines 39-45). Of note, sleeves 2, 3 and 4 had resistances ranging from  $1 \times 10^7$  to  $1 \times 10^9$  ohms. (Col. 10, table 1).

*Opinion*

The examiner has rejected claims 5, 6 and 8-13 under 35 U.S.C. § 103(a) as unpatentable over Aizawa. The examiner cites Aizawa as disclosing a structure comprising a main body of aluminum, an aluminum oxide layer formed by anodization of the main body and a surface layer of a synthetic resin having carbon black dispersed therein. (Examiner's Answer, p. 4). According to the examiner, the porosity of the anodized layer is inherent in the Aizawa structure as aluminum oxide layers formed by anodization are porous unless the layer is further treated to seal the pores. (Examiner's Answer, p. 4).

The examiner recognizes that Aizawa does not explicitly disclose the particle size of the carbon particles in the surface layer. Yet, the examiner concludes that absent a showing of criticality for this size limitation, the particle size would have been within the general skill of a worker in the art at the time of the invention to determine usable and optimum sizes for the particles dispersed in the surface layer. (Examiner's Answer, p. 4). Furthermore, the examiner cites Kirk-Othmer as disclosing average particle diameters for carbon black of less than 5 Fm. (Examiner's Answer, p. 6).

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Appellant contends that a person skilled in the art reading the Aizawa reference would not have been taught what the size of the individual grains of carbon black ought to be. (Appellant's Brief, p. 5). Furthermore, appellant cites Van Nostrand as disclosing that carbon black for commercial applications has a particle size ranging from 100 to 5,000 Fm. (Appellant's Brief, p. 5).

The examiner has failed to establish that the Aizawa reference renders obvious appellant's claimed charging member having a surface protective layer containing electrically conductive fine particles having a particle size of not greater than 5 Fm. As noted by appellant, Aizawa is silent as to carbon black particle size. Yet, it is well settled that to establish a *prima facie* case of obviousness the prior art reference (or references when combined) must teach or suggest all the claim limitations. Any motivation to modify the prior art references must flow from some teaching in the art that suggests the desirability or incentive to make the modification needed to arrive at the claimed invention. *In re Napier*, 55 F.3d 610, 613, 34 USPQ2d 1782, 1784 (Fed Cir. 1995). The examiner, however, has failed to demonstrate that one skilled in the art would be motivated to employ carbon particles having a particle size of not greater than 5 Fm in the developer-retaining member sleeves of Aizawa.

The examiner's reliance on the Kirk-Othmer Encyclopedia fails to establish that the one skilled in the art would desire appellant's claimed 5 Fm or less particle size for Aizawa's carbon black. Specifically, Kirk-Othmer states that "carbon blacks differ in particle size or surface area, average aggregate mass, particle and aggregate mass distributions, morphology or structure, and chemical

composition.” (Kirk-Othmer, Vol. 4, p. 636, emphasis added). Moreover, Kirk-Othmer does not teach or suggest that carbon blacks produced by any known process will inherently have a particle size of 5 Fm or less. Furthermore, Kirk-Othmer does not teach or suggest that carbon blacks for coating a developer-retaining member sleeve, such as that described by Aizawa, will have a particular particle size, let alone the claimed 5 Fm or less particle size. Accordingly, the examiner has failed to establish that Aizawa, alone or in combination with Kirk-Othmer would have motivated one skilled in the art to select the claimed 5 Fm or less particle size for Aizawa’s carbon black.

*Observation*

We reverse the examiner’s rejection of claims 5, 6 and 8-13 as unpatentable over Aizawa as the examiner has failed to demonstrate that Aizawa, alone or in view of Kirk-Othmer, suggests the use of a carbon black having a particle size of 5 Fm or less. As discussed above, Aizawa does not recite a particle size for the carbon black particles dispersed in the synthetic resin surface layer. Aizawa does, however, describe and exemplify the use of “Special Black No. 4” a carbon black powder which is a product of DeGussa. (Aizawa, col. 10, lines 10-11).

The Pengilly ‘004, ‘272 and ‘118 patents describe polyesters having improved infrared light absorption capacity which is obtained by the incorporation of carbon black. (‘004, col. 1, lines 6-9, ‘272, col. 1, lines 10-12 and ‘118, col. 1, lines 11-13). The Pengilly patents describe DeGussa

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Special Black #4 as having an average particle size of 25 nanometers, *i.e.*, 0.025 Fm. ('004, col. 6, lines 66-68, '272, col. 7, lines 4-6 and '118, col. 6, lines 66-68).<sup>2</sup>

One skilled in the art reading Aizawa, and armed with the fact that Special Black No. 4 from DeGussa had a particle size of 0.025 Fm, would have understood Aizawa's developer-retaining member sleeves of examples 1 to contain: 1) a main body of aluminum and an aluminum oxide layer formed by anodization; and 2) a viscous composition applied to the surface having: a) a vinyl chloride copolymer; and b) a carbon black having an average particle size of 0.025 Fm. Additionally, Aizawa describes sleeves 2, 3 and 4 as having resistances ranging from  $1 \times 10^7$  to  $1 \times 10^9$  ohms. (Col. 10, table 1).

Appellant's independent claim 5 contains the preamble "an electrophotographic charging member." The terms appearing in a preamble may be deemed a limitation of a claim where the preamble gives meaning to the claim and properly define the invention. Although no litmus test exists as to what effect should be accorded to words contained in a preamble, a review of the specification in its entirety should be made to determine whether appellant intended such language to represent an additional structural limitation or mere introductory language. *In re Paulsen*, 30 F.3d 1475, 1479, 31 USPQ.2d 1671, 1673 (Fed. Cir. 1994).

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<sup>2</sup>Additionally, Hirayama, which is not prior art, also describes DeGussa Special Black #4 as having an average particle size of 0.025Fm. (Hirayama, col. 17, lines 24-26).

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In the event of further prosecution, the examiner should consider the structural limitations introduced by appellant's "an electrophotographic charging member" preamble. For example, our review of the specification indicates that an electrically conductive member to be incorporated in a charging member for charging an electrophotographic photoreceptor *is required* to exhibit electrical conductivity of  $10^3$  to  $10^9$  ohms as calculated in terms of resistivity. (Appellant's specification, p. 1). While such a limitation appears to be met by Aizawa's exemplified sleeves 2, 3 and 4, the examiner and appellant should clarify for the record what, if any, additional *structural* differences are required by the preamble terminology "an electrophotographic charging member." Further, the examiner should make appropriate findings as to the anodized aluminum sleeves of Aizawa. If no structural differences are found between Aizawa's sleeves and the claimed "electrophotographic charging members" and it is determined that Aizawa's sleeves are capable of performing as "electrophotographic charging members," the examiner should consider making a new ground of rejection over Aizawa citing the Special Black #4 description contained in the Pengilly '004, '272 and '118 patents.

#### *Conclusion*

The decision of the examiner to reject claims 5, 6 and 8-13 stand under 35 U.S.C. § 103(a) as unpatentable over Aizawa is reversed.

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REVERSED

BRADLEY R. GARRIS )  
Administrative Patent Judge )  
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) BOARD OF PATENT  
PAUL LIEBERMAN ) APPEALS  
Administrative Patent Judge ) AND  
) INTERFERENCES  
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MICHAEL P. TIERNEY )  
Administrative Patent Judge )

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Prepared: August 24, 2001