

The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.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. 21

UNITED STATES PATENT AND TRADEMARK OFFICE

---

BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

---

Ex parte RONALD F. ZIOLO,  
JAVIER TEJADA PALACIOS,  
ELIZABETH C. KROLL,  
XIXIANG ZHANG,  
and  
RACHEL PIECZYNSKI

---

Appeal No. 1999-0963  
Application No. 08/787,189

---

ON BRIEF

---

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

LIEBERMAN, Administrative Patent Judge.

DECISION ON APPEAL

This is an appeal under 35 U.S.C. § 134 from the final rejection of the examiner refusing to allow claims 1 through 4, 6, 7, 9, 10 and 12 through 23, which are all the claims pending in this application.

### THE INVENTION

The invention is directed to a magnetic composition comprising cobalt ferrite nanoparticles dispersed in an ionic exchange resin which has a specified magnetic anisotropy. Additional limitations are provided in the following illustrative claim.

### THE CLAIM

Claim 1 is illustrative of appellants' invention and is reproduced below:

1. A magnetic composition comprised of cobalt ferrite nanoparticles dispersed in an ionic exchange resin, wherein the cobalt ferrite nanoparticles are of the formula  $\text{CoFe}_2\text{O}_4$ , and have a magnetic anisotropy constant of about  $10^7$  erg/cm<sup>3</sup> at about 300 °K.

### THE REFERENCES OF RECORD

As evidence of obviousness, the examiner relies upon the following references:

Ziolo (Ziolo '866)	4,474,866	Oct. 2, 1984
Ugelstad et al. (Ugelstad)	4,654,267	Mar. 31, 1987
Ziolo (Ziolo '756)	5,322,756	Jun. 21, 1994

### THE REJECTIONS

Claim 23 stands rejected under 35 U. S. C. § 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors, at the time the application was

filed, had possession of the claimed invention.<sup>1</sup>

Claims 1 through 4, 6, 7, 9, 10 and 12 through 15 and 17 stand rejected under 35 U.S.C. § 102(b) as being anticipated by, or in the alternative under 35 U.S.C. § 103(a) as obvious over Ugelstad.

Claims 1 through 4, 6, 7, 9, 10 and 12 through 21 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Ziolo '756.

Claims 1 through 4, 6, 7, 9, 10, 12 through 17, 21 and 22 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Ziolo '866, in view of Ziolo '756 and Ugelstad.

### OPINION

We have carefully considered all of the arguments advanced by the appellants and the examiner, and agree with the examiner that the rejections of the claims under Section 112, first paragraph and Sections 102(b) and 103(a) over Ugelstad alone or in combination with the Ziolo references are well founded. Accordingly, we affirm these rejections essentially for the reasons set forth in the Answer and for the reason which follow. We agree with the appellants that the rejection under Section 103(a) over Ziolo '756 is not well founded. Accordingly, we reverse this rejection.

---

<sup>1</sup>The rejection of claims 1 and 23 under 35 U.S.C. § 112, second paragraph has been withdrawn. Claim 5 which was previously rejected under 35 U.S.C. § 112, second paragraph has been cancelled. New matter objections to claim 17 have been withdrawn.

As an initial matter the appellants state that, "[t]he rejected claims should stand or fall together." See Brief, page 6. Accordingly, we select claim 1, the broadest independent claim as representative of the claimed subject matter before us. See 37 CFR § 1.192 (c)(7)(1997).

#### Rejection under 35 U.S.C. § 112

We turn initially to the examiner's rejection under the first paragraph of 35 U.S.C. § 112 that claim 23 is directed to new matter. In a rejection under the first paragraph of 35 U.S.C. § 112, paragraph one, it is sufficient if the originally filed disclosure would have conveyed to one of ordinary skill in the art that the appellants had possession of the concept of what is claimed. In re Anderson, 471 F.2d 1237, 1240-41, 176 USPO 331, 333 (CCPA 1973). There is no requirement that the language of the claimed subject matter be present in the specification in ipsissima verba.

The examiner submits that the language of claim 23 is unsupported in the specification and specifically is unsupported in Example XI as alleged by the appellants. See Answer, page 4 and Brief, pages 6 and 7.<sup>2</sup> We agree. Example XI, is directed to mixing the magnetic fluid sample of Example X with potassium silicate. The appellants argue that potassium silicate having a variable composition of  $K_2Si_2O_5$  to  $K_2Si_2O_7$  which

---

<sup>2</sup>We refer in all instances in our opinion to the "Supplemental Examiner's Answer," mailed September 3, 1998 (Paper No. 18), and to the Brief filed, July 17, 1998 (Paper No. 13).

may also contain water is a metal oxide. We find that the mere presence of a metal with a complex anion, i.e., a silicate containing oxygen bonded thereto, is inappropriate to conclude that the material is a metal oxide. It is well settled that an oxide is a binary compound of oxygen generally with a metal.<sup>3</sup> A silicate unequivocally fails to meet that definition. Moreover, even if potassium silicate were to fall within the term "oxide," it is well settled "where an applicant claims, as here, a class of compositions, he must describe *that class* in order to meet the description requirement of the statute." In re Lukach, 442 F.2d 967, 968, 169 USPQ 795, 796 (CCPA 1971). We conclude that a single example, even if directed to one species of a class is insufficient to describe the class as a whole.

Based upon the above findings and consideration, the rejection of claim 23 by the examiner under the first paragraph of 35 U.S.C. § 112 is sustained.

Rejections including Ugelstad

In order for a claimed invention to be anticipated under 35 U.S.C. § 102(b), all of the elements of the claim must be found in one reference. Scripps Clinic & Research Found. v. Genentech Inc., 927 F.2d 1565, 1576, 18 USPQ2d 1001, 1010 (Fed. Cir. 1991).

The appellants admit that, "[t]he reference teaches magnetic polymer particles

---

<sup>3</sup>Julius Grant Ed., Hackh's Chemical Dictionary, p. 481 (4<sup>th</sup> Ed., New York, McGraw-Hill Book Co., 1972).

containing  $\text{CoFe}_2\text{O}_4$  in an ion exchange resin but does not teach the composite of the claimed invention." See Brief, page 9. In our view, Ugelstad teaches each of the elements of the claimed composition, other than the specific claimed physical property, i.e., magnetic anisotropy constant.

We find that Ugelstad is directed to the preparation of magnetic particles including those of cobalt ferrite. See column 1, lines 5-6, column 2, line 40, column 6, lines 38-66, and Examples 24 and 25 in column 20. With respect to Examples 24 and 25, we find that the cobalt ion and ferric and ferrous ions respectively are utilized in the appropriate proportions such as to result in the formation of cobalt ferrite. In this respect, we find that although the respective final contents of cobalt and iron are not precisely stoichiometric, precise stoichiometry is not required by the specification and accordingly, not by the claimed subject matter. See specification, page 16, lines 3-4 wherein it is stated that, "[t]he magnetic species contained in the cobalt ferrite nanoparticles can be stoichiometric, non-stoichiometric, and mixtures thereof, of the formula  $\text{CoFe}_2\text{O}_4$ ."

Neither are we convinced by the appellants' arguments that repetition of Examples starting from Iron (III) ions did not result in a magnetic composition, particularly in view of the prior art teachings of Ziolo that ferric chloride was utilized in the preparation of magnetic particles. See in this respect Ziolo '756 Examples 1 to 5, columns 13-15.

With respect to the ion exchange resin required by the claimed subject matter, we find that Ugelstad discloses styrene divinyl benzene ion exchange resins, at least some being sulfonated, which are the same as those utilized in the specification. See column 3, line 66 to column 4, line 2 and Examples 12 and 14 in columns 14 and 15 which utilize styrene-divinyl benzene polymer resins. In comparison, the specification states that, “[u]seful ion exchange polymer resins include sulfonated polystyrene resins, optionally crosslinked with, for example divinyl benzene.” See specification, page 17, lines 19-20.

Furthermore, as to the requirement for nanoparticles, there is no limitation present in the claimed subject matter directed to the maximum size of the nanoparticles. We find that Ugelstad discloses a process suitable for the preparation of particles in the range of 0.5  $\mu\text{m}$ , but it may also be used for the preparation of particles smaller than 0.5  $\mu\text{m}$ , 0.5 microns constituting 500 nanometers. See column 2, lines 8-11. Accordingly, the disclosure of Ugelstad is sufficient to meet the requirements of the claimed subject matter.

As to the requirement for the cobalt ferrite having a magnetic anisotropy constant of about  $107 \text{ erg/cm}^3$  at about  $300^\circ \text{ K}$ , it is well settled that when appellants’ product and that of the prior art appear to be identical or substantially identical, the burden shifts to appellants to provide evidence that the prior art product does not necessarily or inherently possess the relied-upon characteristics of appellants’ claimed product. In re Fitzgerald,

619 F.2d 67, 70, 205 USPQ 594, 597 (CCPA 1980); In re Best, 562 F.2d 1252, 1254-55, 195 USPQ 430, 433-34 (CCPA 1977). Furthermore, the discovery of a new property even when that property is unobvious from the prior art, cannot impart patentability to claims directed to a known composition. In re Spada, 911 F.2d 705, 708, 15 USPQ2d 1655, 1657 (Fed. Cir. 1990). Based upon the above findings of fact and analysis regarding the applied prior art, which disclose the preparation of substantially stoichiometric magnetic cobalt ferrite nanoparticles in an ion exchange resin, we conclude that the Ugelstad reference of record is sufficient to establish a prima facie case of anticipation with respect to the claimed subject matter.

We shall also sustain the rejection under 35 U.S.C. § 103. It is well settled that the ultimate obviousness is lack of novelty. The claims cannot have been anticipated and not have been obvious. In re Fracalossi, 681 F.2d 792, 794, 215 USPQ 569, 571 (CCPA 1982). Accordingly, there is no further need to inquire into the disclosure of Ugelstad. Furthermore, we shall sustain the rejection of the claimed subject matter over the combination of Ziolo '866 in view of Ziolo '756 and Ugelstad. The appellants having stated that the claims should stand or fall together, and claim 1, having been chosen as representative of the claimed subject matter and the rejection of the claim having been affirmed over Ugelstad alone, we summarily affirm the rejection over the combined teachings of the Ziolo references and Ugelstad. See also, In re Kronig, 539

F.2d 1300, 1302-03, 190 USPQ 425, 426-27 (CCPA 1976).

Rejections over Ziolo '756

We shall not however, sustain the rejection of the claimed subject matter over Ziolo '756. We find that Ziolo '756 is directed to a composite material comprising an ion exchange resin and magnetic particles prepared in accordance with an earlier Ziolo reference, U.S. Patent 4,474,866. See column 3, lines 7-9. We find the matrix is an ion exchange resin preferably being a polystyrene sulfonic acid ion exchange resin cross linked with 1 to 16% divinyl benzene. See column 3, lines 14-16. A magnetic colloid is prepared from ferrous or ferric ions. See column 4, lines 1-2. Furthermore, we find that examples of a precursor ion may include cobalt, and specifically cobalt acetate, among a limited number of disclosed ions. See column 4, lines 2-13. However, even if cobalt ions could be used in conjunction with ferrous or ferric ion, there is no suggestion of the stoichiometry required by the claimed subject matter. Furthermore, there is no disclosure or suggestion for the preparation of cobalt ferrite. As the composition required by the claimed subject matter is neither disclosed nor suggested by the prior art of record, we cannot further conclude that the magnetic anisotropy constant required by the claimed subject would be present in any iron cobalt magnetic composition prepared in accordance with the teachings of Ziolo '756. Based upon the above analysis, we have determined that the examiner's legal conclusion of obviousness is not supported by the

facts. "Where the legal conclusion [of obviousness] is not supported by [the] facts[,] it cannot stand." In re Warner, 379 F.2d 1011, 1017, 154 USPO 173, 178 (CCPA 1967), cert. denied, 389 U.S. 1057 (1968), reh'g denied, 390 U.S. 1000 (1968). Accordingly, the examiner has not established a prima facie case of obviousness.

#### DECISION

The rejection of claim 23 under 35 U. S. C. § 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of the claimed invention is affirmed.

The rejection of claims 1 through 4, 6, 7, 9, 10 and 12 through 15 and 17 under 35 U.S.C. § 102(b) as being anticipated by, or in the alternative under 35 U.S.C. § 103(a) as obvious over Ugelstad is affirmed.

The rejection of claims 1 through 4, 6, 7, 9, 10 and 12 through 17, 21 and 22 under 35 U.S.C. §103(a) as being unpatentable over Ziolo '866, in view of Ziolo '756 and Ugelstad is affirmed.

The rejection of claims 1 through 4, 6, 7, 9, 10 and 12 through 21 under 35 U.S.C. §103(a) as being unpatentable over Ziolo '756 is reversed.

In summary, the rejection of claims 1 through 4, 6, 7, 9, 10, 12 through 17 and 21 through 23 are affirmed. The rejection of claims 18 through 20 are reversed.

The decision of the examiner is affirmed-in-part.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a).

AFFIRMED-IN-PART

BRADLEY R. GARRIS	)	
Administrative Patent Judge	)	
	)	
	)	
	)	
	)	
	)	BOARD OF PATENT
PAUL LIEBERMAN	)	APPEALS
Administrative Patent Judge	)	AND
	)	INTERFERENCES
	)	
	)	
ROMULO H. DELMENDO	)	
Administrative Patent Judge	)	

PL:hh

Appeal No. 1999-0963  
Application No. 08/787,189

13

RONALD ZIBELLI  
XEROX CORPORATION  
XEROX SQUARE 20 A  
ROCHESTER, NY 14644