The opinion in support of the decision being entered today was not written for publication in a law journal and is not binding precedent of the Board.

Paper No. 17

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte ROBERT H. MOFFETT

Appeal No. 2003-0746
Application No. 09/898,437

ON BRIEF

Before KIMLIN, OWENS and KRATZ, Administrative Patent Judges.

KIMLIN, Administrative Patent Judge.

DECISION ON APPEAL

This is an appeal from the final rejection of claims 1-40. Claims 1 and 5 are illustrative:

1. A process to remove phosphorus from an aqueous stream, which comprises phosphorus, comprising: (a) adjusting pH of the stream to a pH of at least 7 by adding a calcium-containing compound; (b) adding one or more metal ions selected from the group consisting of zinc and manganese ions to the stream wherein the metal ion is present in the range of from about 0.01 to about 10,000 ppm, based on weight of the stream; (c) adding an anionic inorganic colloid to the stream; and (d) adding an organic polymer at about 0.01 to about 10,000 ppm, based on weight of the stream, to produce a flocculated mass.

5. A process to remove phosphorus from an aqueous stream, which comprises phosphorus, comprising (a) adjusting pH of the stream to a pH of at least 7 by adding a calcium containing compound; (b) adding one or more metal ions selected from the group consisting of zinc ions and manganese ions to the stream wherein the metal ion is present in the range of from about 0.01 to about 10,000 ppm, based on weight of the stream; (c) adding at least one cationic organic polymer to the stream; and (d) adding at least one anionic organic polymer to the stream to produce a flocculated mass.

The examiner relies upon the following references as evidence of obviousness:

Ayukawa	4,097,377	Jun. 27, 1978
Allgulin	4,566,975	Jan. 28, 1986
Monick et al. (Monick)	4,765,908	Aug. 23, 1988
Laurent et al. (Laurent)	5,269,939	Dec. 14, 1993
Chung et al. (Chung)	5,597,490	Jan. 28, 1997

Appellant's claimed invention is directed to a process for removing phosphorus from an aqueous stream. The process of appealed claim 1 treats the stream with metal ions of zinc or manganese, an anionic inorganic colloid, such as bentonite clay, and an organic polymer flocculant. The process of appealed claim 5 treats the stream with the same metal ions, as well as cationic and anionic organic polymers, such as polyacrylamide.

The appealed claims stand finally rejected under 35 U.S.C. § 103 as follows:

(a) claims 1, 3-5, 7-14, 23 and 24 over Allgulin in view of Chung;

(b) claims 2-4, 6-14 and 25-33 over Allgulin in view of Chung and Laurent;

(c) claims 15, 16, 19, 22-24 and 34 over Ayukawa in view of Monick; and

(d) claims 17, 18, 20-22 and 35-40 over Ayukawa in view of Monick and Laurent.

In accordance with appellant's grouping of claims at page 3 of the principal brief, the following groups of claims stand or fall together with respect to the separate rejections:

(1) claims 1, 3-5, 7-14 and 23-24;

(2) claims 2-4 and 6-14;

(3) claims 25-33;

(4) claims 15, 16, 19 and 22-24;

(5) claim 34;

(6) claims 17, 18 and 20-22; and

(7) claims 35-40.

We have thoroughly reviewed appellant's arguments for patentability, as well as the specification and declaration data relied upon in support thereof. We are in complete agreement with the examiner, however, that the claimed subject matter would have been obvious to one of ordinary skill in the art within the meaning of § 103 in view of the applied prior art. Accordingly,

we will sustain the examiner's rejections for essentially those reasons expressed in the Answer.

We consider first the examiner's rejection of claims 1, 3-5, 7-14, 23 and 24 over Allgulin in view of Chung. Like appellant, Allgulin discloses a process of removing phosphorus from an aqueous stream by treating the stream with metal ions, such as manganese and zinc. Although appellant contends that Allgulin teaches that no additional material, such as an inorganic anionic colloid or a polymer, should be added to the stream because complete precipitation from the metal ions has already been formed (page 5 of principal brief, third paragraph), the examiner has accurately pointed out that Allgulin expressly teaches that the solution/precipitate is passed through a flocculating tank (column 4, lines 59 et seq.). Accordingly, we concur with the examiner that it would have been obvious for one of ordinary skill in the art to employ conventional flocculating materials in the process of Allgulin for removing phosphorus from an aqueous stream. Chung, as well as the Monick reference applied in the other rejection, evidences that the claimed anionic inorganic colloid (bentonite clay) and organic polymers were known in the art as flocculating agents for aqueous streams. Hence, we find no error in the examiner's rationale that it would have been

prima facie obvious for one of ordinary skill in the art to select the presently claimed flocculating materials in the process of Allgulin. We note that appellant's specification attaches no particular criticality to the choice of flocculating materials, but states that such selection depends on a variety of factors and "can be readily determined by one skilled in the art" (paragraph bridging pages 8 and 9).

Appellant contends in the Reply Brief that "Allgulin does **not** suggest adding a flocculant to precipitate phosphorus because *the flocculant is added to aid in removal of the precipitate in the lamella, not to precipitate phosphorus*" (page 1, third paragraph). However, we find no merit in this argument inasmuch as it is not germane to the claimed subject matter on appeal. The appealed claims simply call for removing phosphorus from an aqueous stream by treating the stream with the recited materials and do not specify that the inorganic colloid and organic polymers perform a precipitation function. The appealed claims only require that the inorganic colloid and organic polymers are added in the process of removing phosphorus from an aqueous stream.

We also do not agree with appellant that Chung is non-analogous art. Both Allgulin and Chung are directed to the same field of endeavor of removing materials from aqueous streams with

flocculating agents. In our view, one of ordinary skill in the art would have understood that the treatment process of Allgulin encompasses aqueous streams of the type disclosed by Chung.

Appellant also maintains that the Chung reference teaches away from the claimed invention since it "discloses those aluminum-containing chemicals that are expressly discredited by appellant" (page 8 of principal brief, first paragraph). However, this argument is also not germane to the claimed subject matter since the appealed claims do not preclude the addition of aluminum-containing chemicals. Furthermore, Chung is not a "teaching away" since it specifically discloses appellant's flocculants, namely, bentonite and polyacrylamides. Also, although appellant argues that Chung does not disclose or suggest an anionic inorganic because the reference "discloses nonionic clays or bentonite flocculant" (page 8 of principal brief, penultimate paragraph), the examiner has properly noted that the bentonite of Chung is disclosed in the present specification as an anionic inorganic colloid (see page 9, lines 23-24). As for appellant's contention that Chung "does not suggest combining the anionic inorganic colloid and an organic polymer" (page 8 of principal brief, last paragraph), it is well settled that it is a matter of prima facie obviousness for one of ordinary skill in

the art to combine two or more materials when each is taught by the prior art to be useful for the same purpose. In re Kerkhoven, 626 F.2d 846, 850, 205 USPQ 1069, 1072 (CCPA 1980).

Appellant relies upon declaration evidence to demonstrate "that addition of an anionic colloid and a polymer following the pH adjustment and Zn ions addition (run 3) as recited in the claimed invention, is required to significantly reduce the P concentration and COD" (page 11 of principal brief, last paragraph). We agree with the examiner, however, that the declaration evidence is hardly commensurate in scope with the degree of protection sought by the appealed claims, which broadly recite "an anionic inorganic colloid," "organic polymer," "cationic organic polymer," and "anionic organic polymer," and fail to recite any process parameters. See In re Grasselli, 713 F.2d 731, 743, 218 USPQ 769, 778 (Fed. Cir. 1983). In addition, we are not satisfied that appellant has established on this record that the declaration results would be considered truly unexpected by one of ordinary skill in the art, particularly in light of the fact that Allgulin expressly teaches flocculating an aqueous stream that has been treated with zinc ions in order to remove phosphorus therefrom. In re Merck & Co., 800 F.2d 1091, 1099, 231 USPQ 375, 381 (Fed. Cir. 1986). Just as

unexpected results are evidence of nonobviousness, expected results are evidence of obviousness. In re Skoner, 517 F.2d 947, 950, 186 USPQ 80, 82 (CCPA 1975). Appellant's specification data, cited at page 18 of the principal brief, is not persuasive of nonobviousness for the same reasons.

Appellant does not advance a separate argument for the examiner's rejection of claims 2-4, 6-14 and 25-33 over Allgulin in view of Chung and Laurent. Appellant only states that Laurent does not teach or suggest the asserted missing elements in Allgulin and Chung (see page 12 of principal brief).

Concerning separately argued claims 25-33, appellant submits that each of Allgulin and Chung "discloses steps that would materially affect the basic and novel characteristics of claim 25 and its dependent claims" (page 14 of principal brief, first paragraph). Appellant's argument is based on the "consisting essentially of" language of claim 25. However, appellant has not demonstrated that process steps of Allgulin and Chung not specifically recited in the claims would materially affect the basic process of removing phosphorus from an aqueous stream. For instance, the two adjustment steps for pH of Allgulin, cited by appellant, is also allowed for in the present specification (see page 12 of specification, lines 18-20).

We now turn to the examiner's rejection of claims 15, 16, 19, 22-24 and 34 under § 103 over Ayukawa in view of Monick. There is apparently no dispute that Ayukawa, like appellant, discloses the removal of phosphorus from aqueous streams by adding zirconium to the stream. Ayukawa does not specifically teach also adding the presently claimed organic polymer to produce a flocculated mass. However, Ayukawa teaches that it was known in the art to use polymer electrolytes to remove suspended and dispersed particles from aqueous streams (column 1, lines 40-44) and the reference further teaches that the precipitates are removed by known separation methods such as filtration, sedimentation or flotation (column 7, lines 34-37). Hence, since it was well-known in the art to use polymer flocculants to remove precipitates from aqueous streams, as evidenced by Ayukawa and Monick, as well as Chung, we agree with the examiner that it would have been prima facie obvious to one of ordinary skill in the art to employ a polymer flocculant to effect the removal of precipitates taught by Ayukawa. Appellant's argument that Monick describes zirconium as a catalyst is of no moment since Ayukawa teaches the addition of zirconium ions to remove phosphorus from an aqueous stream.

In conclusion, based on the foregoing and the reasons stated by the examiner, the examiner's decision rejecting the appealed claims is affirmed.

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

AFFIRMED

EDWARD C. KIMLIN Administrative Patent Judge	)	
TERRY J. OWENS Administrative Patent Judge	)	BOARD OF PATENT APPEALS AND INTERFERENCES
PETER F. KRATZ Administrative Patent Judge	)	

ECK:clm

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