

THIS OPINION WAS NOT WRITTEN FOR PUBLICATION

The opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.

Paper No. 16

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte DAN F. SUCIU, PENNY M. WIKOFF

JOHN M. BELLER and CHARLES J. CARPENTER

Appeal No. 95-5092
Application 08/032,581¹

ON BRIEF

Before KIMLIN, WARREN and OWENS, Administrative Patent Judges.

KIMLIN, Administrative Patent Judge.

DECISION ON APPEAL

This is an appeal from the final rejection of claims 1-9, all the claims in the present application. Claim 1 is illustrative:

¹ Application filed March 17, 1993, for reissue of U.S. Patent No. 5,000,859 , issued March 19, 1991, based on application 07/263,161, filed Oct. 26 , 1988 .

1. A process of reducing hexavalent chromium to trivalent chromium and precipitating the trivalent chromium from a waste water stream to form a sludge for disposal, said process comprising the steps of:

- (a) adding soluble sulfide ion to said stream in a ratio of sulfide ion to hexavalent chromium of from about 0.7 to 2.5;
- (b) adding soluble ferrous ion to said stream in a ratio of ferrous ion to hexavalent chromium of from about 0.5 to 5.0.;
- (c) thereafter adjusting pH of said stream to about 7.2 to 8.4;
- (d) adding a flocculating polymer to said stream to promote formation of a floc comprising precipitated trivalent chromium;
- (e) forming a sludge bed comprising said precipitated trivalent chromium; and
- (f) thereafter filtering the floc from said stream using said sludge bed containing said precipitated trivalent chromium.

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

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| Senda et al. | 4,362,629 | Dec. 07, 1982 |
| Aldrich | 4,705,639 | Nov. 10, 1987 |

Schlauch et al. (Schlauch) , "Treatment of Metal Finishing Wastes by Sulfide Precipitation," Report No. EPA-600/2-77-049 (Feb. 1977).

Appellants' claimed invention is directed to a method of treating waste water to reduce the hexavalent chromium therein to trivalent chromium. The method involves adding soluble sulfide ion and soluble ferrous ion in the recited amounts to the waste water stream and thereafter adjusting the pH of the stream to about 7.2 to 8.4.

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Appealed claims 1-4, 7 and 8 stand rejected under 35 U.S.C. § 103 as being unpatentable over Aldrich in view of Schlauch. Claims 5, 6 and 9 stand rejected under 35 U.S.C. § 103 as being unpatentable over Aldrich in view of Schlauch and Senda.²

We have carefully considered the respective positions advanced by appellants and the examiner. In so doing, we find that the prior art cited by the examiner fails to establish a prima facie case of obviousness for the claimed subject matter. Accordingly, we will not sustain the examiner's rejections.

The appealed claims require adding soluble ferrous ion to the waste water stream in a ratio of ferrous ion to hexavalent chromium of from about 0.5 to 5.0. Aldrich, the primary reference, although treating waste water by adding soluble sulfide ion and soluble ferrous ion, discloses that the ferrous ions "are added in milliequivalent amounts equal to about 10 percent of the milliequivalents amounts of hexavalent chromium present in the waste water." (Col. 3, lines 17-19). Aldrich further discloses that "[i]f desired excess ferrous ion can be added up to about 20 percent of the milliequivalent amounts of hexagonal chromium." (Col. 3, lines 19-21). Accordingly, it can be seen that Aldrich's maximum amount of 20% ferrous ion is two and half times

² The examiner has withdrawn the rejection of claims 1-9 under 35 U.S.C. § 251. See paper no. 15.

less than the presently claimed lower limit of 0.5 (50%). Furthermore, at Col. 6, lines 36 et seq., Aldrich teaches that the logical step in order to avoid an excess of sludge would be to eliminate the iron from the treatment process, but in such cases, undesirable H₂S gas would be produced. Therefore, Aldrich teaches that using limited ferrous ion dosages of 10-20% would inhibit the production of H₂S gas as well as produce a 60 to 70% reduction in sludge.

Accordingly, taking into consideration the entirety of the Aldrich disclosure, we fail to find any teaching or suggestion or motivation for one of ordinary skill in the art to perform the Aldrich process by using the claimed amounts of ferrous ion. While the examiner states at page 4 of the final rejection that the claimed ratio of ferrous ions "would have been an obvious matter of process optimization to one skilled in the art", it has been generally held that it is not a matter of prima facie obviousness for one of ordinary skill in the art to optimize a value outside the operable range disclosed by the prior art. In re Sebek, 465 F.2d 904, 907, 175 USPQ 93, 95 (CCPA 1972).

The examiner also states at page 4 of the answer that "[a]ppellants have not presented sufficient factual comparative evidence to show that these amounts are required for the successful reduction of hexavalent chromium to trivalent chromium and the precipitation of trivalent chromium at the pH range recited in the instant claims."

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However, appellants are under no burden of establishing criticality in the absence of a prima facie case of obviousness for the claimed invention.

The secondary references of Schlauch and Senda do not remedy the basic deficiency of Aldrich discussed above.

In conclusion, based on the foregoing, the examiner's decision rejecting the appealed claims is reversed.

REVERSED

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| EDWARD C. KIMLIN |) | |
| Administrative Patent Judge |) | |
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| |) | BOARD OF PATENT |
| CHARLES F. WARREN |) | APPEALS AND |
| Administrative Patent Judge |) | INTERFERENCES |
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| TERRY J. OWENS |) | |
| Administrative Patent Judge |) | |

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