

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opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.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. 32

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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Ex parte ULRICH BRILL

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Appeal No. 95-4209  
Application No. 07/862,486<sup>1</sup>

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HEARD: February 9, 1999

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Before PAK, OWENS and SPIEGEL, Administrative Patent Judges.  
PAK, Administrative Patent Judge.

DECISION ON APPEAL

Ulrich Brill (appellant) appeals from the examiner's refusal to allow claims 1, 2, 4 and 5, which are all of the claims remaining in the application. Claim 2 was amended subsequent to the final rejection.

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<sup>1</sup> Application for patent filed April 2, 1992.

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The subject matter on appeal is directed to an austenitic nickel-chromium-iron alloy consisting of particular amounts of specific constituents. This subject matter is adequately described in the broadest claim on appeal, claim 1, which is reproduced below:

1. An austenitic nickel-chromium-iron alloy consisting of (details in % by weight):

carbon	:	0.12	to	0.30	%
chromium	:	23	to	30	%
iron	:	8	to	11	%
aluminum	:	1.8	to	2.4	%
yttrium	:	0.01	to	0.15	%
titanium	:	0.01	to	1.0	%
niobium	:	0.01	to	1.0	%
zirconium	:	0.01	to	0.20	%
magnesium	:	0.001	to	0.015	%
calcium	:	0.001	to	0.010	%
nitrogen	:		max	0.030	%
silicon	:		max	0.50	%
manganese	:		max	0.25	%
phosphorous	:		max	0.020	%
sulphur	:		max	0.010	%
nickel	:	residue			
including unavoidable impurities.					

As acknowledged by appellant (Brief, page 2), the transitional phrase "consisting of" in claim 1 precludes the presence of other constituents which are not specifically recited.

Claims 1, 2, 4 and 5 stand rejected under 35 U.S.C. § 103 as unpatentable over the disclosure of Japanese Kokai patent

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application 61-79742 published on April 23, 1986 (hereinafter referred to as "Tsuji")<sup>2</sup>.

We reverse.

As apparent from Appendix II supplied by appellant, Tsuji describes an alloy having the claimed constituents in proportions that overlap with those claimed, in addition to having cobalt, molybdenum, tungsten and boron. See also page 2. As far as the claimed proportions are concerned, we concur with the examiner that it would have been prima facie obvious to an artisan with ordinary skill to employ the claimed proportions of the claimed constituents in the alloy described in Tsuji with a reasonable expectation of successfully obtaining an alloy having excellent high temperature strength and economical efficiency. See In re Woodruff, 919 F.2d 1575, 1578, 16 USPQ2d 1934, 1936-37 (Fed. Cir. 1990); In re Boesch, 617 F.2d 272, 276, 205 USPQ 215, 219 (CCPA 1980); In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955). However, as indicated by appellant, we do not believe that Tsuji's

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<sup>2</sup> Reference to this published Japanese patent application is to the corresponding English translation which is attached herewith.

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disclosure regarding the employment of cobalt in an amount of 9% or below, molybdenum in an amount of 12% or below, tungsten in an amount of 6% or below and boron in an amount of 0.05% or less in an alloy can be interpreted as not requiring the presence of all of the above-mentioned components.

Specifically, Tsuji states (page 3) that:

Particularly, among the precipitation-hardening Ni-based heat-resistant alloys for forging (which are currently put to practical use), those which have the  $10^3$ h creep rupture strength of 80MPa or higher at 871EC contain 10% or more of Co without exception (as shown in Figure 1).

Unfortunately, Co is an expensive element. If a precipitation-hardening Ni-based heat-resistant alloy for forging is developed with a low Co content, it will be cost-efficient.

Cobalt is effective in raising the Young's modulus of the alloy at a high temperature and in decreasing the mean thermal expansion coefficient at a high temperature. See page 10.

Molybdenum and tungsten, on the other hand, are necessary for effectively reinforcing the base material of the alloy by solid dissolution. See pages 10 and 11. Also, molybdenum, like cobalt, is effective in lowering the mean thermal expansion coefficient. See page 10. According to Tsuji,

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molybdenum "should be added in a large amount." See page 10. Moreover, boron is employed to strengthen "the crystalline interface" and improve "the high-temperature strength and ductility." See page 12. Consistent with this disclosure, Tsuji exemplifies alloys which all have cobalt, molybdenum, tungsten and boron or at least cobalt and molybdenum. See page 15, Table 1. Thus, when Tsuji is considered in its entirety, it would have suggested to one of ordinary skill in the art that at least some amounts of cobalt and molybdenum are required in Tsuji's alloy.

The dispositive question is, therefore, whether it would have been obvious to eliminate cobalt, molybdenum, tungsten and boron, along with their attendant properties. As a general rule, the omission of a component, and its function from a composition is prima facie obvious as a matter of simplification and/or economics. Compare In re Thompson, 545 F.2d 1290, 1294, 192 USPQ 275, 277 (CCPA 1976); In re Kuhle, 526 F.2d 553, 555, 188 USPQ 7, 9 (CCPA 1975). However, as indicated supra, cobalt, molybdenum, tungsten and boron impart significant properties to the alloy described in Tsuji. Although it may be possible that one of ordinary skill in the

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art would have been led to exclude one or two of these components, together with its or their attendant properties, as a matter of simplification and/or economics, the elimination of all four components, along with their properties, would not have been suggested to one of ordinary skill in the art. To do so would have destroyed the invention on which Tsuji is based. See Ex parte Hartman, 186 USPQ 366, 367 (Bd. Pat. App. & Int. 1974). Accordingly, we reverse the examiner's decision rejecting claims 1, 2, 4 and 5 under 35 U.S.C. § 103.

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

REVERSED

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CHUNG K. PAK	)	
Administrative Patent Judge	)	
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	)	BOARD OF PATENT
TERRY J. OWENS	)	APPEALS
Administrative Patent Judge	)	AND
	)	INTERFERENCES
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CAROL A. SPIEGEL	)	
Administrative Patent Judge	)	

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