

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. 27

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte THOMAS A. GREENWOOD and
THOMAS W. PASTUSAK

Appeal No. 2001-2603
Application No. 08/867,857

ON BRIEF

Before KRASS, DIXON, and SAADAT, Administrative Patent Judges.

KRASS, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal from the final rejection of claims 9, 10, 14, 15, 17 and 18.

Claims 1-8, 11-13, 16 and 19-23 have been allowed by the examiner.

The invention pertains to machine control. In particular, the invention involves static optical machine control (SOMaC) which uses an absolute ranging laser tracking system or its equivalent to measure the position and orientation of the machine end effector when the machine is stationary.

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Representative independent 10 is reproduced as follows:

10. Information storage media, comprising:

computer software storage media having computer-readable information recorded to provide repositioning commands to a machine controller based upon a comparison of measured true position of a machine tool end effector and a digital definition representation of a part.

The examiner relies on the following references:

Arnold et al. (Arnold)	4,365,301	Dec. 21, 1982
Merry et al. (Merry)	4,621,926	Nov. 11, 1986
Leistensnider et al. (Leistensnider)	5,055,752	Oct. 8, 1991
Kyrazis	5,666,202	Sep. 9, 1997

(Filed date Aug. 22, 1995)

Claim 10 stands rejected under 35 U.S.C. § 102 (b) as anticipated by Leistensnider

Claims 9, 10, 14, 15, 17 and 18 stand rejected under 35 U.S.C. § 103. As evidence of obviousness, the examiner cites Kyrazis, Merry and Arnold with regard to claims 9, 17 and 18; Arnold with regard to claims 10, 14 and 15 and, alternatively, Leistensnider with regard to claims 14 and 15.

Reference is made to the briefs and answer for the respective positions of appellants and the examiner.

OPINION

Turning, first, to the rejection under 35 U.S.C. § 102(b), an anticipatory reference is one which describes all of the elements of the claimed invention so as to have placed a person of ordinary skill in the art in possession thereof. In re Spada, 911 F.2d 205, 15 USPQ2d 1655 (Fed. Cir. 1990).

The examiner refers to column 6, lines 34-66, and column 9, lines 14-24, of Leistensnider as disclosing all of the subject matter of instant claim 10. In particular, the examiner points out Leistensnider's "preselected nominal engineering design dimensions of the part to be machined" (column 6, lines 39-40) and data related to the machine tool home position. The examiner also contends that during operation of Leistensnider's machine, a program and stored data are used to provide newly calculated data to the machine control, citing column 6, lines 46-52 and column 9, lines 14-24 (answer-page 3).

Considering the breadth of instant claim 10, the examiner appears to have set forth a prima facie case of anticipation.

Appellants argue that Leistensnider has "no position adjustment or compensation based upon the true position of the machine tool and [sic, end] effector" and that after probing the workpiece, "there is no measurement of where the machine tool actually is in the *Leistensnider* system" [principal brief-page 11]. Further, at page 11 of the reply brief, appellants argue that claim 10 "defines information storage media containing software to provide repositioning compensation

commands based upon measurement of true position of the machine tool end effector with a commanded position from a digital dataset.”

Quite clearly, as cited by the examiner, the “preselected nominal engineering design dimensions of the part to be machined,” of Leistensnider, is a digital dataset representation of a part, as claimed. Further, Leistensnider discloses that “data indicative of the machine tool position...is placed in the storage means” (column 6, lines 44-45). Hence, the reference does provide tool position data. Since Leistensnider discloses the performing of certain calculations on the stored data and then sending newly calculated data to the storage means for later use, “or sends instructions to the machine control 202 which operates the machine tool...” (Column 6,lines 48-52), it is clear that Leistensnider is providing repositioning commands, as claimed. Quite clearly, since Leistensnider is measuring the machine tool position via a probe, and has a digital dataset reproduction of the part, the reference is comparing true position of the machine tool with the expected position and the repositioning commands are based on this comparison.

While the claim recites a true position of a machine tool “end effector” and the reference mentions nothing about such an “end effector,” the examiner explains that “the end effector can be a probe or other machine tool” (answer-page 4) and appellants do not dispute this finding.

Accordingly, we will sustain the rejection of broad claim 10 under 35 U.S.C. § 102 (b).

We turn, next, to the rejection of claims 9, 17 and 18 under 35 U.S.C. § 103 over Kyrakis, Merry and Arnold.

It is the examiner's position that Kyrakis discloses the determination of the position of a tool in three dimensions using a laser and a computer, wherein the measurement system is separate from the machine tool and the system is applicable to machining.

The examiner recognized that Kyrakis does not give specifics on how the tool is controlled but the examiner relied on Merry for the teaching of comparing the desired position to a measured position and controlling the tool to follow a predetermined path, noting column 3, lines 44-57 and column 5, lines 5-18, as well as the figures.

The examiner concluded that it would have been obvious to modify Kyrakis in view of Merry in order to compare the desired position to the measured position and if the error is nonzero, then generate feedback commands to control the tool to follow the predetermined path so as to allow the part to be accurately manufactured. The examiner also found that it would have been obvious to stop and measure the position of the tool and, if necessary, correct its position before beginning machining since this would allow additional time for a tool to achieve a stabilized operating state.

Even so, the examiner recognized that this combination still did not suggest that the path be based on engineering drawings or a digital data set. The examiner turned to Arnold for a teaching of using digital data derived from a part description and stored in memory. The examiner then concluded that it would have been obvious to modify the combination of Kyrakis and Merry in view of Arnold to "derive the control motion from the part description, since the overall objective is to produce a part, which fits its description" (answer-page 5).

The examiner appears to set forth a rational case for obviousness by describing the teachings of the prior art, the differences between those teachings and the instant claimed subject matter, and a plausible reason why the claimed subject matter as a whole would have been obvious over the prior art, within the meaning of 35 U.S.C. § 103.

Appellants argue the various references individually and then conclude that the examiner's conclusion of obviousness must be based on hindsight. The arguments made in the principal brief are basically repeated in the reply brief. We disagree with appellants' arguments.

While appellants argue that Kyrakis describes a high bandwidth, dynamically rigid metrology system and that it uses a pair of stabilized laser beam detectors, with each detector including three reference beam lasers (principal brief-pages 11-12), we fail to find any relevance of this argument to the instant *claimed* subject matter. While appellant argues that Kyrakis "fails to teach measurement of the true position of the end effector" (principal brief-page 12), appellants do not dispute the examiner's explanation that "the end effector can be a probe or other machine tool" (answer-page 4), i.e., appellants do not provide any explanation as to why Kyrakis, or any applied reference, is not considered to teach an "end effector." As far as measurement of the true position, the examiner has explained that it is Merry that is relied on for the teaching of comparing a desired position with a true, or measured, position. Thus, this argument with respect to Kyrakis is unpersuasive.

In explaining the differences between the subject matter of instant claim 9 and Kyrakis, appellants explain, at page 12 of the principal brief, that the former has a "computing system that

calculates the adjustment and corrects the position of the end effector for machine errors (wear, heating, etc.) and factory-induced errors (vibration, ambient temperature changes, movement of the machine or workpiece, etc.).” The argument is not persuasive because instant claim 9 does not mention any of these factors or errors recited by appellants. Arguments directed to limitations not appearing in the claims are not persuasive of nonobviousness.

Appellants argue the combination of Kyrazis and Merry because Kyrazis “is a measurement system while *Merry* is a machine tool controller” (principal brief-page 13). We disagree. As pointed out by the examiner, at page 5 of the answer, Kyrazis “is not simply a measurement system, but also teaches the use of tooling and error correction,” noting column 23, lines 11-25 and column 13, lines 5-12.

Appellants argue that Merry does not use an independent measurement system to measure true position of the end effector and does not provide the claimed comparison. However, it is Kyrazis which the examiner uses to show an independent measurement system, at column 7, lines 49-65. Further, Merry does provide for comparison, at column 3, lines 44-57, as pointed out by the examiner (answer-page 4) and appellants have not adequately explained why this is not equivalent to the comparison in the instant claimed invention.

Appellants argue that Arnold does not cure the deficiencies of Kyrazis and Merry. We do not find the deficiencies argued by appellants. Moreover, appellants argue that Arnold software has “little similarity to what Applicant describes and claims” (principal brief-page 13) and that “[s]ignificant features are missing in *Arnold* entirely from the functionality of the software of the

present invention.” Again, such generalities are not persuasive as this argument points to no specific language which appellants regard as distinguishing over the combination of applied references. The claims do not mention the “software” argued by appellants and appellants do not point out what “significant features” are being argued.

Accordingly, since appellants’ arguments are not persuasive of error in the examiner’s rationale, we will sustain the rejection of claims 9, 17 and 18 under 35 U.S.C. § 103.

The examiner also rejects claims 10, 14 and 15 under 35 U.S.C. § 103 over Arnold.

Appellants’ arguments, in toto, are that Arnold “does not have software that remotely corresponds to what Applicant claims” because it does not have “repositioning commands to a machine controller or delta correction commands” (principal brief-page 14).

The examiner explains that the claims do not actually require delta correction commands, or repositioning commands. They merely require that the media have information “recorded to provide repositioning commands.” While the examiner’s reasoning shows the breadth of the claims, appellants do not respond to the examiner’s allegation that no actual correction commands are required, but that the media only has information that is recorded to provide such commands.

Again, since appellants have failed to present any convincing rationale as to why the instant claims distinguish over the applied references, we will sustain the rejection of claims 10, 14 and 15 under 35 U.S.C. § 103 over Arnold.

Turning, finally, to the rejection of claims 14 and 15 under 35 U.S.C. § 103 over Leistensnider, we will also sustain this rejection.

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The examiner explains, at page 7 of the answer, how Leistensnider is considered to disclose the claimed subject matter but for stating that a predetermined threshold is used. The examiner further explains that it would have been obvious to modify Leistensnider to provide for this deficiency because the use of a predetermined threshold of zero “so that the parts are made correctly.”

Appellants’ only response is that Leistensnider assumes the machine tool knows where it actually is and never corrects the NC media for true position. We agree with the examiner that claim 14 requires only that the media have computer readable information recorded to provide delta correction commands in machine media to a machine controller and does not require that the NC media be corrected as appellants argue. Accordingly, we will sustain the rejection because appellants have presented no arguments convincing us of error on the examiner’s part.

Since appellants have not convinced us of any error in the examiner’s prima facie case, we will sustain the rejection of claim 10 under 35 U.S.C. § 102 (b) and the rejections of claims 9, 10, 14, 15, 17 and 18 under 35 U.S.C. § 103.

The examiner’s decision is affirmed.

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

AFFIRMED

ERROL A. KRASS)	
Administrative Patent Judge)	
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)	BOARD OF PATENT
JOSEPH L. DIXON)	APPEALS
Administrative Patent Judge)	AND
)	INTERFERENCES
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