

The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.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. 20

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte TOMOYUKI TERADA

Appeal No. 1998-2740
Application 08/438,492

ON BRIEF

Before THOMAS, JERRY SMITH and LALL, Administrative Patent Judges.

JERRY SMITH, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on the appeal under 35 U.S.C. § 134 from the examiner's rejection of claims 1-7, which constitute all the claims in the application. An amendment after final rejection was filed on December 1, 1997 and was entered by the examiner.

The disclosed invention pertains to a robot movement programming method and apparatus for creating a program for moving a robot along a movement path using an information

processing device.

Representative claim 1 is reproduced as follows:

1. A robot movement programming method for creating a program for moving a robot along a movement path using an information processing device, said method comprising the steps of:

(a) creating at least one sample program for specifying sequence patterns of movement of the robot for at least one sample workpiece, and registering the at least one sample program in a pattern library;

(b) defining parameters representing geometric quantities of said sample workpiece for the respective sequence patterns specified by said sample program created in said step (a);

(c) defining conversion formulas for obtaining position data of teaching points for determining the movement path using said parameters for said sample workpiece;

(d) determining the sequence of the robot movement by selecting one sequence pattern from said sequence patterns created in said step (a), and registering the at least one sample program, the one sequence pattern, the parameters, and the conversion formula in the pattern library for said sample workpiece;

(e) editing values of said parameters in said conversion formulas defined for the sequence pattern selected in said step (d) for a new workpiece of the same or common shape but having different dimensions;

(f) calculating the teaching point position data with respect to the movement sequence determined in said step (d), by software means based on said conversion formulas and said parameter values for said new workpiece; and

(g) obtaining a robot movement program based on said teaching point position data calculated in said step (f) for said new workpiece.

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The examiner relies on the following references:

Seki et al. (Seki)	5,113,338	May 12, 1992
Mizuno et al. (Mizuno)	5,485,552	Jan. 16, 1996
	(effectively filed Aug. 10, 1992)	

Claims 1-7 stand rejected under 35 U.S.C. § 103. As evidence of obviousness the examiner offers Seki in view of Mizuno.

Rather than repeat the arguments of appellant or the examiner, we make reference to the briefs and the answer for the respective details thereof.

OPINION

We have carefully considered the subject matter on appeal, the rejection advanced by the examiner and the evidence of obviousness relied upon by the examiner as support for the rejection. We have, likewise, reviewed and taken into consideration, in reaching our decision, the appellant's arguments set forth in the briefs along with the examiner's rationale in support of the rejection and arguments in rebuttal set forth in the examiner's answer.

It is our view, after consideration of the record before us, that the evidence relied upon and the level of skill in the particular art would have suggested to one of ordinary skill in the art the obviousness of the invention as set forth in claims

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1-7. Accordingly, we affirm.

Appellant has indicated that for purposes of this appeal the claims will all stand or fall together as a single group [brief, page 7]. Consistent with this indication appellant has made no separate arguments with respect to any of the claims on appeal. Accordingly, all the claims before us will stand or fall together. Note In re King, 801 F.2d 1324, 1325, 231 USPQ 136, 137 (Fed. Cir. 1986); In re Sernaker, 702 F.2d 989, 991, 217 USPQ 1, 3 (Fed. Cir. 1983). Therefore, we will consider the rejection against independent claim 1 as representative of all the claims on appeal.

In rejecting claims under 35 U.S.C. § 103, it is incumbent upon the examiner to establish a factual basis to support the legal conclusion of obviousness. See In re Fine, 837 F.2d 1071, 1073, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988). In so doing, the examiner is expected to make the factual determinations set forth in Graham v. John Deere Co., 383 U.S. 1, 17, 148 USPQ 459, 467 (1966), and to provide a reason why one having ordinary skill in the pertinent art would have been led to modify the prior art or to combine prior art references to arrive at the claimed invention. Such reason must stem from some teaching, suggestion or implication in the prior art as a whole

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or knowledge generally available to one having ordinary skill in the art. Uniroyal, Inc. v. Rudkin-Wiley Corp., 837 F.2d 1044, 1051, 5 USPQ2d 1434, 1438 (Fed. Cir.), cert. denied, 488 U.S. 825 (1988); Ashland Oil, Inc. v. Delta Resins & Refractories, Inc., 776 F.2d 281, 293, 227 USPQ 657, 664 (Fed. Cir. 1985), cert. denied, 475 U.S. 1017 (1986); ACS Hosp. Sys., Inc. v. Montefiore Hosp., 732 F.2d 1572, 1577, 221 USPQ 929, 933 (Fed. Cir. 1984). These showings by the examiner are an essential part of complying with the burden of presenting a prima facie case of obviousness. Note In re Oetiker, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992). If that burden is met, the burden then shifts to the applicant to overcome the prima facie case with argument and/or evidence. Obviousness is then determined on the basis of the evidence as a whole and the relative persuasiveness of the arguments. See Id.; In re Hedges, 783 F.2d 1038, 1039, 228 USPQ 685, 686 (Fed. Cir. 1986); In re Piasecki, 745 F.2d 1468, 1472, 223 USPQ 785, 788 (Fed. Cir. 1984); and In re Rinehart, 531 F.2d 1048, 1052, 189 USPQ 143, 147 (CCPA 1976). Only those arguments actually made by appellant have been considered in this decision. Arguments which appellant could have made but chose not to make in the brief have not been considered [see 37 CFR § 1.192(a)].

With respect to representative, independent claim 1, the

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examiner indicates how he perceives the invention of claim 1 to be taught by the disclosure of Seki [answer, pages 4-7]. Of particular note is the examiner's position that since Seki determines the movement path of a tool, then Seki teaches the conversion formulas of step (c). The examiner cites Mizuno for the sole purpose of confirming that "teaching points" are simply specific points along the actual path of movement.

Appellant argues that neither Seki nor Mizuno, alone or in combination, teaches the features of creating a sample program and then editing the geometric parameters of the work piece to create a new robot movement program using conversion formulas as claimed [brief, page 10]. Appellant asserts that the part program taught by Seki does not teach the claimed invention which automatically creates the teaching point positions and robot movement program based on the edited parameters and conversion formulas.

The examiner responds that the conversion formulas of claim 1 are functionally met by Seki because Seki determines tool movement along a path [answer, page 7]. The examiner goes on to explain that Seki teaches the automatic determination of a new program path when a path similar to a stored path is desired [id., pages 7-8].

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Appellant responds that "conversion formulas" are structural elements and cannot be given a functional definition as proposed by the examiner. Appellant asserts that the examiner's definition of conversion formulas is inconsistent with the meaning provided in the specification. Appellant also responds that Mizuno also does not disclose the calculation of teaching points [reply brief].

We agree with the position argued by the examiner. The salient question appears to be whether or not Seki teaches the use of conversion formulas for determining the movement path of a tool or work piece. We find that Seki does teach this feature of the claimed invention. As noted by Appellant, a part program is disclosed by Seki at column 3, lines 20-59. The part program, however, only tells the robot computer what the initial teaching points are and how the computer is to move from point to point. For example, the part program disclosed by Seki indicates that the robot is to move in a circular arc in approaching the work piece and then move in five straight line segments, and finally to withdraw from the work piece in another circular arc. The actual points (the teaching points) along the desired path, however, are not provided to the robot computer. These points have to be calculated by the robot computer of Seki. In other

words, the information that the robot is to move from point P2 to point P3 in a straight line only tells the robot computer how to get from point P2 to point P3. The conversion formulas for determining the ultimate movement path are stored within the robot computer. Using point P2 and point P3 and the straight line parameter, Seki calculates the path for actually moving the robot between point P2 and P3. The remainder of the teaching points between points P2 and P3 must be calculated by the robot computer. The computer would have to calculate a different path if a path other than a straight line was desired. Therefore, we agree with the examiner that Seki teaches that the path of movement is based on parameters of the work piece and defined conversion formulas. These conversion formulas form part of the robot computer apparatus and mathematically define path movements using formulas.

Seki permits an operator to machine a new work piece which is similarly shaped to a stored work piece by simply replacing the points P2 and P3 etc. and to let the robot computer automatically recalculate the teaching points (the actual path movement) based on these new parameters. In our view, the formulas for actually following a straight line or a circular arc in Seki are conversion formulas as disclosed and claimed by

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appellant. Therefore, we do not agree with appellant that Seki does not teach the creation of a sample program and then editing the geometric parameters of a work piece to create a new robot movement using conversion formulas as claimed.

Since we find that Seki automatically calculates teaching point positions and robot movement programs based on the edited parameters and prestored conversion formulas, we are not persuaded that the examiner has erred in making the rejection of claims 1-7. Therefore, the decision of the examiner rejecting claims 1-7 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

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JAMES D. THOMAS)	
Administrative Patent Judge)	
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)	BOARD OF PATENT
JERRY SMITH)	
Administrative Patent Judge)	APPEALS AND
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)	INTERFERENCES
)	
PARSHOTAM S. LALL)	
Administrative Patent Judge)	

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STAAS & HALSEY
700 ELEVENTH STREET, NW, SUITE 500
WASHINGTON, DC 20001

JS:caw