

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte KLAUS KEHRLE and ANDRE STORK

Appeal 2008-1101
Application 09/747,678
Technology Center 2600

Decided: July 28, 2008

Before JOSEPH F. RUGGIERO, MAHSHID D. SAADAT,
and ROBERT E. NAPPI, *Administrative Patent Judges*.

RUGGIERO, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

Appellants appeal under 35 U.S.C. § 134 from the Examiner's rejection of claims 11-28, which are all of the claims pending in this application. Claims 1-10 have been canceled. We have jurisdiction under 35 U.S.C. § 6(b).

We affirm-in-part.

Appellants' invention relates to collaborative computer-aided design (CAD) systems in which modifications are enabled to be made to a virtual design by a plurality of spatially distributed users. In particular, an indication is provided of the degrees of freedom of modification components and the effects on the degrees of freedom of any changes made to the virtual design. (Specification 5:1-10).

Claim 11 is illustrative of the invention and reads as follows:

11. A method of manipulating computer aided design (CAD) objects, comprising:

receiving user input to associate two CAD objects, wherein said user input identifies a coupling between said two CAD objects selected from a group of connections consisting of: a vertex-to-vertex connection, an axis-to-axis connection, an edge-to-axis connection, and a face-to-face connection;

displaying said two CAD objects according to the coupling identified by the user input;

calculating a reduction in degrees of freedom between said two CAD objects caused by said identified coupling; and

displaying an indication of said reduction in said degrees of freedom in association with the display of said two CAD objects.

The Examiner relies on the following prior art references to show unpatentability:

Noyama	US 5,594,850	Jan. 14, 1997
Mukouchi	US 6,104,403	Aug. 15, 2000, (filed Apr. 16, 1998)
Bentley	US 6,341,291 B1	Jan. 22, 2002 (filed Apr. 22, 1999)

Claims 11-15, 21-24, and 26-28 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Mukouchi.

Claims 16-19 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Mukouchi in view of Bentley.

Claims 20 and 25 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Mukouchi in view of Noyama.

Rather than reiterate the arguments of Appellants and the Examiner, reference is made to the Briefs and Answer for the respective details. Only those arguments actually made by Appellants have been considered in this decision. Arguments which Appellants could have made but chose not to make in the Briefs have not been considered and are deemed to be waived [see 37 C.F.R. § 41.37(c)(1)(vii)].

ISSUES

(i) Under 35 U.S.C. § 103(a), with respect to appealed claims 11-15, 21-24, and 26-28, would one of ordinary skill in the art at the time of the invention have found the claimed invention unpatentable over the teachings of Mukouchi alone?

(ii) Under 35 U.S.C. § 103(a), with respect to appealed claims 16-19, would one of ordinary skill in the art at the time of the invention have found it obvious to combine Mukouchi and Bentley to render the claimed invention unpatentable?

(iii) Under 35 U.S.C. § 103(a), with respect to appealed claims 20 and 25, would one of ordinary skill in the art at the time of the invention have found it obvious to combine Mukouchi and Noyama to render the claimed invention unpatentable?

PRINCIPLES OF LAW

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 (Fed. Cir. 1988). In so doing, the Examiner must make the factual determinations set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 17 (1966). “[T]he examiner bears the initial burden, on review of the prior art or on any other ground, of presenting a *prima facie* case of unpatentability.” *In re Oetiker*, 977 F.2d 1443, 1445 (Fed. Cir. 1992). Furthermore,

“there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness” . . . [H]owever, the analysis need not seek out precise teachings directed to the specific subject matter of the challenged claim, for a court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ.

KSR Int’l Co. v. Teleflex Inc., 127 S. Ct. 1727, 1741 (2007)(quoting *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006)).

ANALYSIS

I. The rejection of claims 11-15, 21-24, and 26-28 based on Mukouchi

a.) Claims 11, 12, 14, 21, 22, 24, 26, and 27

With respect to the Examiner's 35 U.S.C. § 103(a) rejection of appealed independent claims 11, 21, and 26 based on the teachings of Mukouchi, Appellants' arguments assert a failure to set forth a prima facie case of obviousness since all of the claimed limitations are not taught or suggested by the applied Mukouchi reference. Appellants' arguments initially focus on the contention (App. Br. 6, 7, 10, 11, 12-14; Reply Br. 3-8) that, in contrast to the claimed invention, Mukouchi does not disclose the calculating or determining of the reduction of the degrees of freedom caused by the coupling of two part objects.

After reviewing the disclosure of Mukouchi in light of the arguments of record, we are in general agreement with the Examiner's position as stated in the Answer. In particular, we agree with the Examiner (Ans. 10-11) that a skilled artisan would have recognized and appreciated that the CAD system described by Mukouchi, which involves the creation and assembly of part models, would have necessarily included the calculations and determinations required for the movement and placement of the part models into assembled formations. In addition, it is apparent that the display of the assembled part objects resulting from the movement and placement calculations, such as the hinged door display of Mukouchi's Figure 24, provides an indication to a user of the reduction of the degrees of freedom of movement of the assembled part objects.

We also find to be unpersuasive Appellants' contention (App. Br. 7, 11, 13, and 14; Reply Br. 3-7) that Mukouchi actually teaches away from a determination of the reduction in degrees of freedom of coupled part objects by disclosing, in relation to the hinged door embodiment illustrated in Figure 24, that there is no restriction in rotational movement around the axis which joins the hinge representative junction points 116 and 118. We agree with the Examiner (Ans. 11), however, that although Mukouchi suggests (col. 15, ll. 33-43) that rotational movement around the hinge junction point axis is not restricted, a skilled artisan would have recognized and appreciated that once a door is fixed to a door frame by hinges the door would have restricted translational movement. Further, Appellants' arguments to the contrary notwithstanding, the translational degree of freedom movement of the door part object 114 before coupling to the door frame part object 112 in Mukouchi is not restricted (Mukouchi, Figure 21) enabling the door 114 to be translationally moved into engagement with the hinge junction points 116, 118 of the door frame 112 after which the translational movements are restricted (Mukouchi, Figure 24).

We further find to be without merit Appellants' argument (App. Br. 8, 11, 12, and 14; Reply Br. 4 and 6-8) that Mukouchi's Figure 24 diagram is not a display provided to a user but is merely an "explanatory diagram" which aids in the description of the Mukouchi's invention. While Mukouchi arguably does not explicitly describe the Figure 24 illustration as being displayed to a user, it is apparent that, when considered within the context of the entirety of the disclosure of Mukouchi, Figure 24 is depiction of a display presented to a user indicating the allowable movements of assembled part models. For example, the drawing format of the part models 112 and

114 in Mukouchi's Figure 24 is identical to that used when illustrating the part model assemblies in Mukouchi's Figures 9 and 15 which are disclosed as being displayed on a work screen (Mukouchi, col. 11, l. 4 and col. 13, l. 2). Further, while Appellants argue (*id.*) that Mukouchi identifies (col. 6, ll. 11-13) the Figure 24 diagram as an "explanatory" diagram, it is noteworthy that Figures 9 and 15, which are unambiguously described as being displayed on a work screen, are also identified as "explanatory" diagrams at column 5, lines 38 and 55.

In view of the above discussion, since the Examiner's prima facie case of obviousness has not been overcome by any convincing arguments from Appellants, we sustain the Examiner's 35 U.S.C. § 103(a) rejection, based on the teachings of Mukouchi, of independent claims 11, 21, and 26, as well as dependent claims 12, 14, 22, 24, and 27 not separately argued by Appellants.

b.) Claim 15

We sustain as well the Examiner's 35 U.S.C. § 103(a) rejection of dependent claim 15 based on Mukouchi. We refer to our earlier discussion in which we found no error in the Examiner's stated position that the Figures 19 and 24 illustrations in Mukouchi disclose the calculation and display of a reduction in degrees of freedom of the coupled door and door frame assembly since a hinged door will be restricted in translational movement. Although Appellants contend (App. Br. 9-10; Reply Br. 5) that Mukouchi does not provide for a calculation of the reduction of degrees of freedom caused by the relative positioning of part objects before their coupling, we find no language in dependent claim 15 which requires a reduction in degree of freedom to be calculated *before* objects are coupled.

c.) Claims 13, 23, and 28

We do not, however, sustain the Examiner's 35 U.S.C. § 103(a) rejection of dependent claims 13, 23, and 28 based on Mukouchi. Unlike the previously discussed claims, each of claims 13, 23, and 28 sets forth a specific requirement that an identified part coupling is verified to determine whether it is consistent with a prior part coupling.

In addressing the language of claims 13, 23, and 28, the Examiner makes reference to the discussion at column 14, line 41 through column 15, line 9 of Mukouchi in relation to Figure 15 of Mukouchi, in which the movement of parts 66 and 68 is checked to determine if they are within an allowable assembling radius illustrated by spheres 74 and 76. As pointed out by Appellants (App. Br. 9, 12, and 15; Reply Br. 4-6 and 8), however, the cited portion of Mukouchi is concerned only with the assembly of previously disconnected or non-coupled parts such as part models 64, 66, and 68. As such, while Mukouchi does check for allowable movements of parts 66 and 68 as they are moved into assembled relationship with part 64, such does not involve a determination of consistency with prior couplings since there is no disclosed prior coupling as required by claims 13, 23, and 28.

II. The rejection of claims 16-19 based on the combination of Mukouchi and Bentley.

a.) Claim 16

This Examiner's rejection of claim 16 is sustained. In addressing the requirements of appealed claim 16, the Examiner (Ans. 7-8), has applied the collaborative design teachings of Bentley to the disclosed CAD system of

Mukouchi. We find no convincing arguments from Appellants (App. Br. 15-16) that persuade us of any error in the Examiner's position which concludes that an ordinarily skilled artisan would have recognized and appreciated that the shared network environment disclosed by Bentley would have served as an obvious enhancement to the system of Mukouchi enabling plural users to provide design input.

b.) Claim 17

We also sustain the Examiner's rejection of dependent claim 17. We find no error in the Examiner's finding (Ans. 8, 16, and 17) that Bentley discloses that the original model image is made up of plural components and only the locally edited (changed) version of the components that have been changed are communicated to the server repository. Accordingly, it is our view that the broadly stated claimed requirement that only model changes are communicated is satisfied.

c.) Claims 18 and 19

The Examiner's rejection of dependent claims 18 and 19 is also sustained. We agree with the Examiner (Ans. 17-18) that Bentley's disclosure (e.g., col. 13, ll. 8-23) that a user is blocked from "committing" proposed conflicting changes to a component that have been previously committed by another user satisfies the claimed object locking feature of claim 18. With respect to dependent claim 19, we also find no error in the Examiner's stated position that an ordinarily skilled artisan would have recognized that locked objects would obviously be unlocked after conflicts have been resolved.

III. The rejection of claims 20 and 25 based on the combination of Mukouchi and Noyama.

We sustain the Examiner's rejection of dependent claims 20 and 25. In addressing the requirements of appealed claims 20 and 25, the Examiner (Ans. 10, 18, and 19) has applied the transformation matrix teachings of Noyama to the disclosed CAD system of Mukouchi. We find no convincing arguments from Appellants (App. Br. 19-20) that persuade us of any error in the Examiner's position which concludes that an ordinarily skilled artisan would have recognized and appreciated that the use of a transformation matrix as taught by Noyama would have served as an obvious enhancement to the system of Mukouchi. We agree with the Examiner that Noyama's use of a transformation matrix, as illustrated in Figure 11, to implement changes between source and destination images would have obvious application to the CAD system of Mukouchi by enabling and facilitating the changes in relative position and orientation of components of a virtual model.

CONCLUSION

In summary, with respect to the Examiner's 35 U.S.C. § 103(a) rejections of appealed claims 11-28, we have sustained the rejection of claims 11, 12, 14-22, and 24-27, but have not sustained the rejection of claims 13, 23, and 28. Accordingly, the Examiner's decision rejecting appealed claims 11-28 is affirmed-in-part.

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No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(iv)(effective September 13, 2004).

AFFIRMED-IN-PART

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