UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Ex parte DUANE R. PILLAR

Appeal No. 2005-2341
Application No. 10/420,187

ON BRIEF[1]

Before GARRIS, FRANKFORT, and NASE, Administrative Patent Judges.
NASE, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal from the examiner's final rejection (mailed March 5, 2004) of claims 1 to 25, 28, 29, 31 to 34, 36 and 37. Claims 26 and 27, which are all of the other claims pending in this application, have been allowed.[2]

We REVERSE.

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[1] On December 8, 2005, the appellant waived the oral hearing scheduled for January 11, 2006.

[2] Subsequent to the final rejection, the appellant amended claims 28, 29 and 31 and canceled claims 30 and 35.

BACKGROUND

The appellant's invention relates to diagnostic systems for equipment service vehicles. In particular, the invention relates to an on-board diagnostic system for equipment service vehicles (specification, p. 1). A copy of the claims under appeal is set forth in the appendix to the appellant's brief.

The prior art references of record relied upon by the examiner in rejecting the appealed claims are:

Sonehara et al. (Sonehara)	5,555,171	Sep. 10, 1996
Steinmetz et al. (Steinmetz)	6,219,626	Apr. 17, 2001
Discenzo	6,434,512	Aug. 13, 2002

Claims 1 to 25 stand rejected under 35 U.S.C. § 103 as being unpatentable over Sonehara in view of Steinmetz.

Claims 28, 29, 31 to 34, 36 and 37 stand rejected under 35 U.S.C. § 103 as being unpatentable over Sonehara in view of Steinmetz and further in view of Discenzo.

Rather than reiterate the conflicting viewpoints advanced by the examiner and the appellant regarding the above-noted rejections, we make reference to the answer (mailed February 10, 2005) for the examiner's complete reasoning in support of the

rejections, and to the brief (filed November 18, 2004) and reply brief (filed April 11, 2005) for the appellant's arguments thereagainst.

OPINION

In reaching our decision in this appeal, we have given careful consideration to the appellant's specification and claims, to the applied prior art references, and to the respective positions articulated by the appellant and the examiner. Upon evaluation of all the evidence before us, it is our conclusion that the evidence adduced by the examiner is insufficient to establish a prima facie case of obviousness with respect to the claims under appeal. Accordingly, we will not sustain the examiner's rejections of claims 1 to 25, 28, 29, 31 to 34, 36 and 37 under 35 U.S.C. § 103. Our reasoning for this determination follows.

In rejecting claims under 35 U.S.C. § 103, the examiner bears the initial burden of presenting a prima facie case of obviousness. See In re Rijckaert, 9 F.3d 1531, 1532, 28 USPQ2d 1955, 1956 (Fed. Cir. 1993). A prima facie case of obviousness is established by presenting evidence that would have led one of ordinary skill in the art to combine the relevant teachings of the references to arrive at the claimed invention. See In re Fine, 837 F.2d 1071, 1074, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988) and In re Lintner, 458 F.2d 1013, 1016, 173 USPQ 560, 562 (CCPA 1972).

Evidence of a suggestion, teaching, or motivation to modify a reference may flow from the prior art references themselves, the knowledge of one of ordinary skill in the art, or, in some cases, from the nature of the problem to be solved, see Pro-Mold & Tool Co. v. Great Lakes Plastics, Inc., 75 F.3d 1568, 1573, 37 USPQ2d 1626, 1630 (Fed. Cir. 1996), Para-Ordinance Mfg., Inc. v. SGS Importers Int'l., Inc., 73 F.3d 1085, 1088, 37 USPQ2d 1237, 1240 (Fed. Cir. 1995), cert. denied, 117 S. Ct. 80 (1996), although "the suggestion more often comes from the teachings of the pertinent references," In re Rouffet, 149 F.3d 1350, 1355, 47 USPQ2d 1453, 1456 (Fed. Cir. 1998). The range of sources available, however, does not diminish the requirement for actual evidence. A broad conclusory statement regarding the obviousness of modifying a reference, standing alone, is not "evidence." Thus, when an examiner relies on general knowledge to negate patentability, that knowledge must be articulated and placed on the record. See In re Lee, 277 F.3d 1338, 1342-45, 61 USPQ2d 1430, 1433-35 (Fed. Cir. 2002). See also In re Dembiczak, 175 F.3d 994, 999, 50 USPQ2d 1614, 1617 (Fed. Cir. 1999).

Sonehara

Sonehara's invention relates to a system which collects data acquired at a plurality of controllers disposed within such a construction machine as a driving machine to carry out predetermined processing operation, e.g., fault diagnosis. Figure 1 shows a block diagram of a system which collects data acquired at a plurality of controllers

disposed within a hydraulic shoveling machine. A plurality of controllers 1, 2, 3 and 4 are mounted to the hydraulic shoveling machine. The controller 2 is a pump controller for receiving a manipulation amount, etc. of an operating lever and controlling a swash plate of a hydraulic pump according to the received manipulation amount. The pump controller 2 also receives detection signals 10a, . . . from a plurality of sensors 10, . . . such as hydraulic sensors provided in a hydraulic circuit. The pump controller 2 stores, as control data, the received detection signals 10a, . . . and the driving signals 11a outputted to the respective actuators 11, ... The pump controller 2 also creates fault data (error data) indicative of faults in parts controlled by the pump controller 2 on the basis of the stored control data, signals received from manipulated switches and the manipulated amounts of the operating levers, and stores them as fault data.

The controller 3 is a governor controller 3 for controlling a governor in response to a manipulation amount in an operating lever. The governor controller 3 outputs driving signals 13a, . . . to a plurality of actuators 13, . . . such as governor motors. The governor controller 3 receives detection signals 12a, . . . from a plurality of such sensors 12, . . . as engine rotational sensors for detecting the rotational speed of the engine. The governor controller 3 also stores, as control data, the received detection signals 12a, . . . and the driving signals 13a, . . . to be outputted. Further, the governor controller 3 creates fault data indicative of faults in parts controlled by the governor

controller 3 on the basis of the stored control data and the manipulation amounts of operating levers, and stores them as fault data.

The controller 4 is a valve controller 4 for controlling control valves disposed in a hydraulic pipe circuit between hydraulic pumps and such hydraulic actuators as boom cylinders. The valve controller 4 outputs driving signals 15a, . . . to a plurality of such actuators 15, . . . as solenoids provided to control values. The valve controller 4 receives detection signals 14a, . . . from a plurality of such sensors 14, . . . as hydraulic sensors provided in the hydraulic circuit. The valve controller 4 also stores, as control data, the received detection signals 14a, . . . and the driving signals 15a, . . . to be outputted. Further, the valve controller 4 creates fault data indicative of faults in parts controlled by the valve controller 4 on the basis of the stored control data, manipulated positions of switches and the manipulation amounts of operating levers, and stores them as fault data.

The controller 1 is a monitor panel 1 disposed in a driver's cab. The monitor controller 1 selectively instructs one of various sorts of controls through operator's switch manipulation according to one of various sorts of works to be carried out by the hydraulic shoveling machine, receives a detection signal from a fuel meter, and to

control a display unit to cause information necessary for driving the machine and fault code information to be displayed on the liquid crystal display screen thereof.

The monitor controller 1, pump controller 2, governor controller 3 and valve controller 4 are interconnected for mutual communication by means of a signal line 19. When an operator manipulates the monitor controller 1 and selects, for example, 'heavy excavation' as a working mode, the monitor panel 1 outputs a control signal to the respective controllers 2, 3 and 4 via the signal line 19 to provide an engine rotational speed and output torque corresponding to the 'heavy excavation' and to perform such a predetermined control as automatic deceleration function. The monitor panel 1 also receives the respective fault data from the controllers 2, 3 and 4 via the signal line 19, arranges these data on a time series basis, and stores the arranged data as a fault history. Further, the monitor panel 1 stores its own fault data (error information) and also stores the working mode being currently selected and its own control signal to be outputted to the respective controllers 2, 3 and 4.

The signal line 19 is connected with another extension of signal line 19a for external connection. The signal line 19a has a connector 18 provided thereon for mutual connection between the external and internal controllers of the hydraulic shoveling machine.

An external controller 0, which can be connected to the aforementioned connector 18, has a function of carrying out fault diagnosing operation over the hydraulic shoveling machine. The external controller 0 is made up of a personal computer main body 16 and a display unit 17.

Steinmetz

Steinmetz's invention relates generally to diagnostic systems for evaluating complex systems and subsystems, and in particular for diagnosing electronic, mechanical, and electromechanical subsystems. Steinmetz's invention is directed to an automated diagnostic tool having a soft structure architecture that can be easily and quickly used to troubleshoot and diagnose systems and subsystems. In accordance with Steinmetz's invention, the diagnostic system includes a portable (e.g., laptop) computer loaded with a troubleshooting program, which gathers data regarding the status and performance of systems and subsystems via data cables connected to a 1553 digital communications bus that links the systems and subsystems together.

Figure 8A shows an Apache AH64 model "A" helicopter 814, and indicates that the Remote Hellfire Electronics (RHE) unit 802 is located in a forward avionics bay of the helicopter 814. In the Apache AH64 model "A" helicopter, the RHE unit 802 is connected to the 1553 bus of the helicopter, and can provide a convenient location to

tap the 1553 bus. Figure 8B shows elements of the Diagnostic Aid (DA) tool, and how the tool can be connected to the 1553 bus of the helicopter via the RHE unit 802. The DA tool includes a laptop computer 816 with a 1553 bus interface PCMCIA card 814, a PCMCIA adapter cable 812, an extension cable 810 approximately 6 feet long, a bus coupler 806, and an interface cable 804 that is approximately 24 inches long. The laptop computer 816 is loaded with the DA diagnostic software and a diagnostic file specific to the Apache AH64 model "A" helicopter.

Claims 1 to 25

In the obviousness rejection of claims 1 to 25, the examiner ascertained[3] that Sonehara does not explicitly teach that the control module and the operator interface are mounted on-board the vehicle. To meet this deficiency in the teachings of Sonehara the examiner concluded (answer, p. 4) that it would have been obvious at the time the invention was made to a person having ordinary skill in the art to replace the test control module and the operator interface of Sonehara with the portable laptop computer taught by Steinmetz and to mount the laptop computer on-board the vehicle "in order to facilitate automatic report of faulty condition to the vehicle operator when

[3] After the scope and content of the prior art are determined, the differences between the prior art and the claims at issue are to be ascertained. Graham v. John Deere Co., 383 U.S. 1, 17-18, 148 USPQ 459, 467 (1966).

problems are detected and to prevent the laptop computer from shuffling when the vehicle is moving in the test environment." This obviousness determination was amplified by the examiner on pages 9-10 of the answer as follows:

> Replacing the test module 16 and the operator interface 17 (fig.1) with the laptop computer that can perform diagnostic test on board the vehicle of Steinmetz by connecting the laptop to the connector 18 (fig.1) of Sonehara would have been obvious when an on-board diagnosis on the vehicle of Sonehara is desired. Concerning [the] "mounting" feature, since Steinmetz also teaches that the laptop computer (the diagnostic aid (DA)) (col.8, lines 51-59) is capable of acquiring data directly via data bus from other subsystems of the vehicle when certain subsystem in the vehicle is operating in a certain way (col.11, lines 30-36., col.18, lines 36-44), and since it is well known actual running of the vehicle to obtain operating data from [a] vehicle subsystem is normally a necessary procedure for collecting operating data of the subsystems in [a] diagnostic process, fixedly mounting the laptop computer on a proper support so that the laptop does not fall or fly around when the vehicle is running for data collection during the diagnostic data collection procedure is well motivated within the level of an ordinary person skilled in the art at the time the invention was made.

The appellant argues that the applied prior art does not suggest mounting the control module and the operator interface of Sonehara on-board the vehicle. We agree. In that regard, while Steinmetz would have suggested substituting a laptop computer for the control module and the operator interface of Sonehara, there is no teaching or suggestion in Steinmetz to mount the laptop computer on-board Sonehara's vehicle. To supply this omission in the teachings of the applied prior art, the examiner made the above-noted determination that this difference would have been obvious to an artisan.

However, this determination has not been supported by any evidence that would have led an artisan to arrive at the claimed invention.

Thus, it is our view that the only suggestion for modifying Sonehara in the manner proposed by the examiner to meet the "mounted" limitation stems from hindsight knowledge derived from the appellant's own disclosure. The use of such hindsight knowledge to support an obviousness rejection under 35 U.S.C. § 103 is, of course, impermissible. See, for example, W. L. Gore and Assocs., Inc. v. Garlock, Inc., 721 F.2d 1540, 1553, 220 USPQ 303, 312-13 (Fed. Cir. 1983), cert. denied, 469 U.S. 851 (1984). It follows that we cannot sustain the examiner's rejections of claims 1 to 25.

Claims 28, 29, 31 to 34, 36 and 37

In the rejection of claims 28, 29, 31 to 34, 36 and 37, the examiner applies Sonehara and Steinmetz as in the rejection of claims 1 to 25 and further adds thereto the teachings of Discenzo. In our view, we cannot sustain this rejection for the reason set forth above with respect to claims 1 to 25.

CONCLUSION

To summarize, the decision of the examiner to reject claims 1 to 25, 28, 29, 31 to 34, 36 and 37 under 35 U.S.C. § 103 is reversed.

REVERSED

BRADLEY R. GARRIS Administrative Patent Judge	)	
CHARLES E. FRANKFORT Administrative Patent Judge	)	BOARD OF PATENT APPEALS AND INTERFERENCES
JEFFREY V. NASE Administrative Patent Judge	)	

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