THIS OPINION WAS NOT WRITTEN FOR PUBLICATION

Paper No. 19

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte MOTOAKI UTAMURA

Appeal No. 1998-1248
Application No. 08/460,086

HEARD: May 15, 2000

Before FLEMING, GROSS, and LEVY, ***Administrative Patent Judges***.

FLEMING, ***Administrative Patent Judge.***

DECISION ON APPEAL

This is a decision on appeal from the final rejection of claims 10 through 33. Claims 1 through 9 have been canceled.

The invention relates to the control of gas turbine power generators. On page 2 of the specification, Appellant

identifies that the system makes use of a variable speed gas turbine, which allows for high power output at elevated temperature. On page 8 of the specification, Appellant describes the generator as one where there is an alternating current applied to the rotor windings. Appellant states that by controlling the frequency of the alternating current supplied to the rotor windings the frequency of the power generated at the stator can be controlled. Appellant identifies on pages 8 and 9 of the specification that by controlling the alternating current applied to the rotor windings, a constant frequency power is generated by the variable speed turbine generator. Appellant identifies on page 10 of the specification that the fuel flow to the gas turbine is responsive to the load demand. As Appellant shows in figure 3, plot 120, this results in the turbine speed increasing in response to increase load and ambient temperature. Appellant identifies on page 10 of the specification that by operating the turbine at increased speed at higher ambient temperature, the compressor will intake more air and allow the turbine to maintain a high power output. Appellant also discloses on page 10 of the specification that

the frequency of the alternating current applied to the rotor is adjusted based upon load demand and ambient temperature.

Independent Claim 10 is representative of the invention:

10. An adjustable speed gas turbine power generation apparatus comprising:

a compressor for taking in and compressing air;

a combustor for combusting fuel with the compressed air from the compressor to generate combustion gas;

a gas turbine driven by the generated combustion gas;

a fuel control device for controlling an amount of fuel to be supplied to the combustor in response to a load demand signal;
and

a power generator having a primary winding connected to a power transmission system and a secondary winding which is excited with alternating current; and wherein

the generator and compressor are connected to the gas turbine by a drive shaft, and wherein a rotational speed of the drive shaft increases to adjust an output of the gas turbine in response to an increase in the load demand signal and an increase in the ambient temperature.

The Examiner relies upon the following references:

Carroll (Caroll)	4,321,791	Mar. 30, 1982
Geary, Jr. et al. (Geary)	4,452,048	Jun. 5, 1984
Lauw et al. (Lauw)	4,994,684	Feb. 19, 1991

Claims 10 through 12 and 18 through 23 stand rejected under 35 U.S.C. § 103 as being unpatentable over Carroll and Lauw.

Claims 13 through 17 and 24 through 33 stand rejected under 35 U.S.C. § 103 as being unpatentable over Carroll, Lauw and Geary.

Rather then reiterate the arguments of the Appellant and the Examiner, we refer to the briefs[1] and the answer for the respective details thereof.

OPINION

We will not sustain the rejection of claims 10 through 33 based upon 35 U.S.C. § 103. The Examiner has not set forth a ***prima facie*** case. It is the burden of the Examiner to establish why one having ordinary skill in the art would have been lead to the claimed invention by the express teachings or suggestions found in the prior art or by the implication contained in such teachings or suggestions. ***In re Sernaker***, 702 F.2d 989, 995, 217 USPQ 1, 6 (Fed. Cir. 1983).

[1] Appellant filed an appeal brief on April 7, 1997. On September 16, 1997 Appellant filed a reply brief. On January 15, 1998 the Examiner mailed a letter stating that Appellant's request to enter the reply brief was granted.

"Additionally, when determining obviousness, the claimed invention should be considered as a whole; there is no legally recognizable 'heart' of the invention. "***Para-Ordinance Mfg. V SGS Importers Int'l Inc.***, 73 F.3d. 1085, 1087, 37 USPQ2d 1237, 1239 (Fed. Cir. 1995) (***citing W. L. Gore & Assocs., Inc. v. Garlock Inc***., 721 F.2d 1540, 1548, 220 USPQ 303, 309 (Fed. Cir. 1983), ***Cert. denied***, 469 U.S. 851 (1984)).

Appellant argues on page 7 of the appeal brief (brief) that the Examiner erroneously analyzed the claims to only include that the control is responsive to ambient temperature. Appellant asserts that the Examiner overlooked the claimed recitation of the control being responsive to ambient temperature and load demand. On page 8 of the brief, Appellant asserts that none of the references of record "varies the rotational speed of the power generator to adjust an output of the gas turbine in response to the load demand signal and ambient temperature." Appellant asserts on pages 8 and 9 of the brief that Carroll does not teach controlling drive shaft speed in accordance with ambient temperature as asserted in the rejection. Rather, Appellant asserts that

Carroll teaches that ambient temperature is used to modify the acceleration characteristics of the gas turbine control. Further, Appellant argues on page 11 of the brief that there is no motivation to combine Lauw with Carroll.

The Examiner asserts on page 5 of the answer that Carroll teaches in Column 9, lines 11 through 14 and Column 3, lines 10 through 14, that the turbine control is responsive to ambient temperature and load. Further, the Examiner asserts that Lauw provides motivation to combine with Carroll as Lauw states that the generator control can be used with gas turbines.

First, we consider the rejection of claims 10 through 12 and 18 through 23 under 35 U.S.C. § 103 as being unpatentable over Carroll and Lauw. As pointed out by our reviewing court, we must first determine the scope of the claim. "[T]he name of the game is the claim." ***In re Hiniker Co***., 150 F.3d 1362, 1369, 47 USPQ2d 1523, 1529 (Fed. Cir. 1998). Claims will be given their broadest reasonable interpretation consistent with the specification, and limitations appearing in the

specification are not to be read into the claims. ***In re Etter***, 756 F.2d 852, 858, 225 USPQ 1, 5 (Fed. Cir. 1985).

We find that the scope of independent claim 10 includes that the fuel flow to the gas turbine is controlled in response to the load and that the speed of the turbine is increased with increasing ambient temperature and load. This is shown in the following limitations of claim 10: "controlling the fuel supplied to the combustor in response to a load demand signal" and "wherein the rotational speed of the drive shaft increases to adjust an output of the gas turbine in response to an increase in the load demand signal and an increase in the ambient temperature." The scope of claims 11 through 12 and 18 through 23 all include these limitations as the claims are all ultimately dependent upon claim 10.

Having determined the scope of claims 10 through 12 and 18 through 23, we next consider the teachings of the references applied by the Examiner in the rejection under 35 U.S.C. § 103. We find that Carroll teaches a speed control system for a gas turbine engine, which is responsive to the speed demanded of the turbine. See Column 1, lines 57 to 60

and Column 5, lines 40 through 48. Carroll teaches that the speed of the turbine is controlled in accordance with the speed vs. fuel flow chart shown in figure 3. Thus, we find that Carroll does not teach turbine control responsive to a load signal, but rather responsive to a speed demand signal. As such we do not find that Carroll teaches that the speed of the turbine is responsive to demanded load or ambient temperature. We note that, Carroll discloses that increasing load to the turbine may decrease the speed of the turbine. In figure 3, the plot 46 shows the full load maximum fuel flow line and plot 60 shows the no-load fuel flow line. See Column 3, lines 36 through 39. In plot 58 the turbine speed is decreasing as the turbine transition between no-load idle (end of line segment 60) to full load idle (point 44).

We find that Lauw teaches a generator control circuit for a variable speed generator. See column 1, lines 6 through 10. Lauw's system is such that alternating current may be applied to the generator rotor windings. See Column 11, lines 36 through 44. The power output from the variable speed generator is at the same frequency as the power grid. See Column 7, lines 35 through 27. Further, Lauw teaches that

controlling the energy delivered to the turbine response based upon the desired energy power demand. See Column 13, lines 4 through 18. However, we do not find that Lauw teaches that the speed of the turbine is responsive to load and ambient temperature.

Thus, we find that neither Carroll nor Lauw teaches or suggests that the speed of the turbine is controlled based upon load demand signal and that the speed of the generator is responsive to load and ambient temperature. Accordingly, we will not sustain the rejection of claims 10 through 12 and 18 through 23 under 35 U.S.C. § 103.

We next consider the rejection of claims 13 through 17 and 24 through 33 under 35 U.S.C. § 103 as being unpatentable over Carroll in view of Lauw and Geary. We find that the scope of independent claims 13, 16 and 17 includes the limitation that generator is controlled based upon load demanded and that the speed of the generator is responsive to load and ambient temperature. This scope is shown in the following limitations of claim 13: "controlling an amount of fuel supplied to the combustor in response to a load demand signal," and "means for controlling the rotational speed of

the generator to adjust an output of the gas turbine in response to the load demand signal and ambient temperature." This scope is also shown in the following limitations of claims 16 and 17: "a fuel control device for controlling an amount to be supplied to the combustor in response to a load demand signal" and "controlling a rotational speed of the generator and gas turbine on the one axis in response to an ambient temperature and load demand signal." The scope of claims 14 through 15 and 24 through 33 includes these limitations as all of these claims ultimately depend upon either claim 13, 16 or 17.

On page 8 of the brief, Appellant asserts that the arguments applied to the rejection of claim 10 also apply to the rejection of claims 13, 16 and 17. Further, with respect to claim 13, Appellant asserts that Geary's control teaching utilizing ambient air temperature is different then the claimed control.

On page 4 of the final office action, dated September 5, 1996, the Examiner asserts that the combination of Carroll and Lauw teaches the control of the turbine as a function of temperature. Further, the Examiner asserts that Geary teaches

that it is known to operate a combined cycle turbine system as a function of ambient temperature. On page 6 of the answer, the Examiner asserts that the combination of Carroll, Lauw and Geary shows how to control the speed of a turbine shaft as a function of ambient temperature and load.

As stated above, we do not find that the combination of Carroll and Lauw teaches or suggests a turbine control system which is responsive to a load demand signal and that the speed of the generator is responsive to load and ambient temperature. We find that Geary teaches an fluid catalatic cracker process where the incoming air to a compressor is mixed with warm air to heat the incoming air. See Column 2, lines 53 through 57. The mixing of the air is controlled based upon a measure of the ambient temperature. See Column 2, lines 54 through 63. The purpose of heating the input air is to reduce the amount of power required to start the compressor. See Column 2, lines 37 through 40. We fail to find that Geary teaches controlling the turbine in accordance with the demanded load or that the speed of the turbine is responsive to load and ambient temperature. Rather, we find that Geary teaches that the measure of ambient temperature is

used to determine how much to heat the incoming air. Accordingly, we find that the combination of Carroll, Lauw and Geary fails to teach or suggest all of the limitations of claims 13 through 17 and 24 through 33.

For the foregoing reasons, we will not affirm the examiner's rejections of claims 10 through 33 under 35 U.S.C. § 103.

REVERSED

MICHAEL R. FLEMING Administrative Patent Judge	)	
ANITA PELLMAN GROSS Administrative Patent Judge	)	BOARD OF PATENT APPEALS AND INTERFERENCES
STUART S. LEVY Administrative Patent Judge	)	

lp

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Appeal No. 1998-1248
Application No. 08/460,086

APJ FLEMING

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DECISION: REVERSED
Send Reference(s): Yes No
or Translation (s)
Panel Change: Yes No
Index Sheet-2901 Rejection(s):
Prepared: January 25, 2001

Draft Final

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OB/HD GAU

PALM / ACTS 2 / BOOK
DISK (FOIA) / REPORT