

Google LLC v. EcoFactor

IPR2022-00538

U.S. Pat. No. 9,194,597

Petitioner Google's Oral Hearing Demonstration

May 3, 2023

Independent Claims 1 and 9

1. A method for detecting manual changes to the setpoint for a thermostatic controller comprising:

- providing a thermostatic controller operatively connected to a heating ventilation and air conditioning system, the temperature set point of the heating ventilation and air conditioning system being manually changeable;
- accessing stored data comprising a plurality of internal temperature measurements taken within a structure and a plurality of outside temperature measurements;
- using the stored data to predict changes in temperature inside the structure in response to at least changes in outside temperatures;
- calculating with at least one computer, scheduled programming of the thermostatic controller for one or more times to control the heating ventilation and air conditioning system, the scheduled programming comprising at least a first automated setpoint at a first time;
- recording, with the thermostatic controller, actual setpoints of the heating ventilation and air condition system;
- communicating the actual setpoints from the one or more thermostatic controllers to the at least one computer;
- generating with the at least one computer, a difference value based on comparing at least one of the an actual setpoints at the first time for the thermostatic controller to the first automated setpoint for the thermostatic controller;
- detecting a manual change to the first automated setpoint by determining whether the at least one of the actual setpoints and the first automated setpoint are the same or different based on the difference value; and
- logging the manual change to a database.

9. A method for incorporating a manual change to a setpoint for a thermostatic controller comprising:

- providing a thermostatic controller operatively connected to a heating ventilation and air conditioning system, the temperature set point of the heating ventilation and air conditioning system being manually changeable;
- accessing stored data comprising a plurality of internal temperature measurements taken within a structure and a plurality of outside temperature measurements;
- using the stored data to predict changes in temperature inside the structure in response to at least changes in outside temperatures;
- calculating with at least one computer, scheduled programming of the thermostatic controller for one or more times to control the heating ventilation and air conditioning system, the scheduled programming comprising at least a first automated setpoint at a first time and a second automated setpoint at a second time;
- recording, with the thermostatic controller, actual setpoints of the heating ventilation and air condition system;
- communicating the actual setpoints from the one or more thermostatic controllers to the at least one computer;
- comparing at least one of the actual setpoints at the first time for the thermostatic controller to the first automated setpoint for the thermostatic controller;
- detecting a manual change to the first automated setpoint by determining whether the at least one of the actual setpoints and the first automated setpoint are the same or different; and
- changing the operation of the heating ventilation and air conditioning system based on the manual change to the setpoint at the second time.

Independent Claim 17

17. An apparatus for detecting manual changes to one or more setpoints for a thermostatic controller, the apparatus comprising:

a programmable communicating thermostat operatively connected to a heating ventilation and air conditioning system, the temperature set point of the heating ventilation and air conditioning system being manually changeable;

at least an electronic storage medium comprising stored data of a plurality of internal temperature measurements taken within a structure and a plurality of outside temperature measurements;

computer hardware configured to communicate with the electronic storage medium and with the programmable communicating thermostat, the computer hardware con-

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Principal Issues and Argument

Ground 1

1. Ehlers '330 teaches rates of change of inside temperature in response to changes
2. Claim element [1d] (“using the stored data to predict changes in temperature inside changes in outside temperatures”)
3. Claim element [1e] (“calculating with at least one computer, scheduled programming or more times to control the heating ventilation and air conditioning system, the s a first automated setpoint at a first time”) and [9e] (“calculating scheduled programming controller based on the predicted rate of change, the scheduled programming control at a first time and a second automated setpoint at a second time to control the heating system”)
4. Claim element [1h] (“generating with the at least one computer, a difference value actual setpoints at the first time for the thermostatic controller to the first automated controller; detecting a manual change to the first automated setpoint by determining setpoint and first automated setpoint are the same or different based on the difference

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Ground 1

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3. Claim element [1e] (“calculating with at least one computer, scheduled programming or more times to control the heating ventilation and air conditioning system, the s a first automated setpoint at a first time”) and [9e] (“calculating scheduled programming controller based on the predicted rate of change, the scheduled programming control at a first time and a second automated setpoint at a second time to control the heating system”)
4. Claim element [1h] (“generating with the at least one computer, a difference value actual setpoints at the first time for the thermostatic controller to the first automated controller; detecting a manual change to the first automated setpoint by determining setpoint and first automated setpoint are the same or different based on the difference

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