

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

GOOGLE LLC and
ECOBEE TECHNOLOGIES ULC,
Petitioner,

v.

ECOFACITOR, INC.,
Patent Owner.

IPR2022-00538¹
Patent 9,194,597 B2

Before SCOTT B. HOWARD, PAUL J. KORNICZKY, and
BRENT M. DOUGAL, *Administrative Patent Judges*.

DOUGAL, *Administrative Patent Judge*.

DECISION
Final Written Decision
Determining All Challenged Claims Unpatentable
35 U.S.C. § 318(a)

¹ IPR2022-01461 (ecobee Technologies ULC) has been joined with this proceeding.

I. INTRODUCTION

A. *Background and Summary*

On a Petition (Paper 1 (“Pet.”)) from Google LLC, we instituted an *inter partes* review of claims 1–24 (the “challenged claims”) of U.S. Patent 9,194,597 B2 (Ex. 1001, “the ’597 patent”). Paper 7 (“Dec.”).

Patent Owner, EcoFactor, Inc., filed a Response (Paper 10, “PO Resp.”), Petitioner² filed a Reply (Paper 14, “Reply”), and Patent Owner filed a Sur-reply (Paper 15, “Sur-reply”). An oral hearing was held on May 11, 2023, and a copy of the transcript was entered into the record. Paper 25 (“Tr.”).

We have jurisdiction under 35 U.S.C. § 6. This Decision is a Final Written Decision under 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73 as to the patentability of the claims on which we instituted trial. Having reviewed the arguments of the parties and the supporting evidence, we determine that Petitioner has shown, by a preponderance of the evidence, that the challenged claims are unpatentable.

B. *Related Matters*

The parties identify the following related district court litigation: *Google, LLC v. EcoFactor, Inc.*, No. 4:21-cv-03220 (N.D. Cal.); and *EcoFactor, Inc. v. ecobee, Inc.*, No. 6:21-cv-00428 (W.D. Tex.). Pet. 5; Paper 4, 2 (Patent Owner’s Mandatory Notices); Paper 21 (Joint Notice Regarding Co-pending Litigation). Petitioner also notes that it “is in the process of filing petitions for inter partes review challenging all claims of

² Google LLC and ecobee Technologies ULC.

the other three patents [involved in the *Google v. EcoFactor* litigation referenced *supra*].” Pet. 72–73.

C. The '597 Patent

The '597 patent is entitled “System, Method and Apparatus for Identifying Manual Inputs to and Adaptive Programming of a Thermostat.” Ex. 1001, code (54). The '597 patent explains that programmable thermostats can “enhance comfort as compared to manually changing setpoints using a non-programmable thermostat,” but “[i]f the temperatures programmed into a thermostat do not accurately reflect the preferences of the occupants, those occupants are likely to resort to manual overrides of the programmed settings.” *Id.* at 1:25–28, 1:60–2:8. Techniques disclosed in the '597 patent detect manual changes to the setpoint for a thermostatic controller and then incorporate those manual changes into the long-term programming of the thermostatic controller. *Id.*, Abstr.

The '597 patent explains that most thermostats do not record manual inputs locally, and also do not recognize or transmit the fact that a manual override has occurred. *Id.* at 5:45–48. Moreover, frequent changes in setpoints may be automatically initiated by thermostat algorithms, making it difficult to infer a manual override from the mere fact that a setpoint has changed. *Id.* at 5:47–53. Figure 7, reproduced below, illustrates a method for detecting the occurrence of a manual override. *Id.* at 5:54–55.

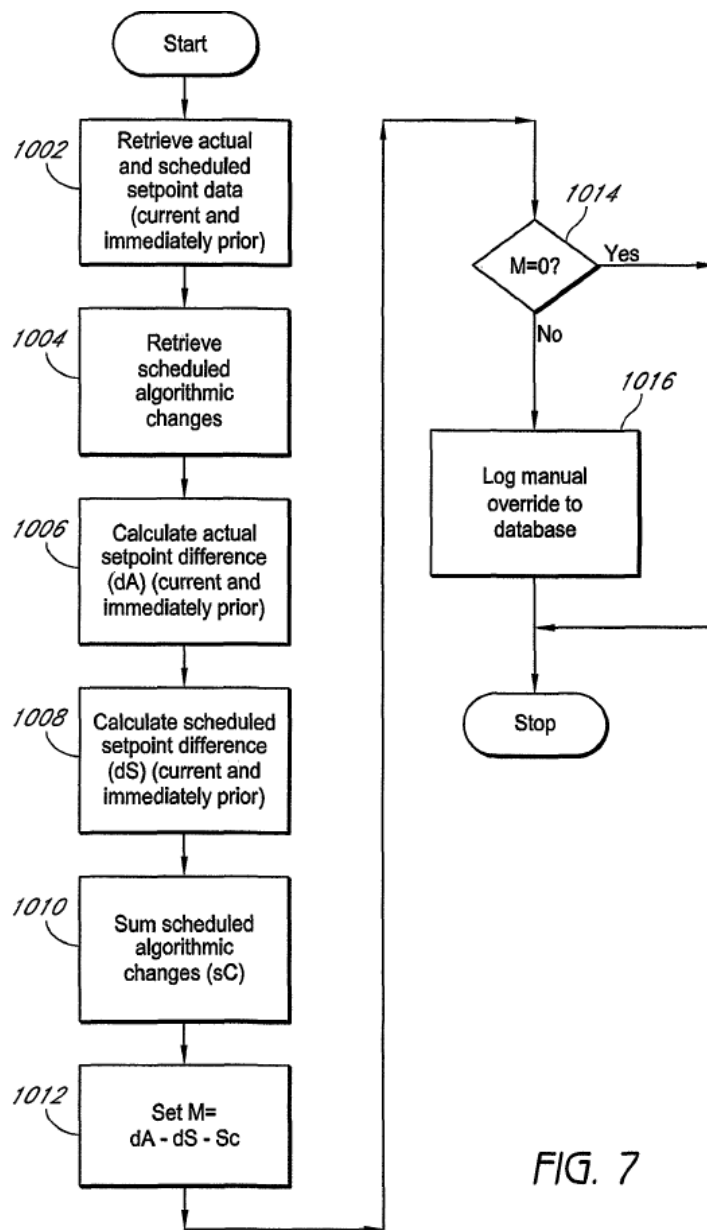


FIG. 7

At step 1002 illustrated in Figure 7, a server associated with the thermostat (e.g., a thermostat management server) retrieves setpoint data used to infer the occurrence of a manual override from one or more databases. *Id.* at 3:61–63, 5:55–6:19. At step 1004, the server retrieves any scheduled automated setpoint changes. *Id.* Such changes may include algorithmic changes intended to reduce energy consumption. *Id.*

At step 1006, the server calculates the setpoint difference. *Id.* At step 1008, the server calculates the scheduled setpoint difference. *Id.* At step 1010, the server evaluates and sums all active algorithms and other server-initiated strategies to determine their net effect on the setpoint. *Id.* For example, if one algorithm has increased setpoint by 2 degrees as a short-term energy savings measure, but another algorithm has decreased the setpoint by one degree to compensate for expected subjective reactions to weather conditions, the net algorithmic effect is +1 degree. *Id.*

At step 1012, the server calculates the value for M, where M is equal to the difference between actual setpoints dA, less the difference between scheduled setpoints dS, less the aggregate of algorithmic change sC. *Id.* at 6:20–30. At step 1014, the server evaluates the difference—if the difference equals zero, the server concludes that no manual override has occurred; however, if the difference is non-zero, the server concludes that a manual override has occurred, and at step 1016, the server logs the override to the database(s). *Id.*

After a manual override has been recognized, it can be used to either make short-term changes to the thermostat, or to alter long-term changes to interpretive rules and to setpoint scheduling for the thermostat. *Id.* at 2:37–42. Figure 8, reproduced below, illustrates a process of interpreting manual overrides and making short-term thermostat changes in response thereto. *Id.* at 2:37–42, 6:31–32.

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