



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/186,769	06/20/2016	MARK WHALLEY	16006-US	5357
131256	7590	09/12/2019	EXAMINER	
Trimble Navigation Limited, c/o MARSH FISCHMANN & BREYFOGLE LLP 8055 E. TUFTS AVE. SUITE 450 DENVER, CO 80237			VALVIS, ALEXANDER M	
			ART UNIT	PAPER NUMBER
			3752	
			NOTIFICATION DATE	DELIVERY MODE
			09/12/2019	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

PTOMAIL@MFBLAW.COM

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte MARK WHALLEY

Appeal 2019-002466
Application 15/186,769¹
Technology Center 3700

Before MICHAEL C. ASTORINO, PHILIP J. HOFFMANN, and
KENNETH G. SCHOPFER, *Administrative Patent Judges*.

ASTORINO, *Administrative Patent Judge*.

DECISION ON APPEAL

Pursuant to 35 U.S.C. § 134(a), the Appellant appeals from the Examiner's decision rejecting claims 1, 4–11, and 34–37. We have jurisdiction over the appeal under 35 U.S.C. § 6(b).

We REVERSE.

¹ The Appellant identifies Trimble Inc. as the real party in interest. Appeal Br. 1.

STATEMENT OF THE CASE

Subject Matter on Appeal

The Appellant's invention generally relates to a system for controlling operation of a centrally anchored sprinkler arm that moves in a circular pattern. See Spec. ¶¶ 1, 3.

Claims 1 and 34 are the independent claims on appeal. Claim 1, reproduced below, is illustrative of the claimed subject matter.

1. A center pivot irrigation system, comprising:
 - a sprinkler arm comprising one or more pipe segments each including a plurality of spaced apart nozzles;
 - a plurality of towers supporting the sprinkler arm, wherein a drive motor is provided on each of the towers to drive wheels on the tower to rotate the sprinkler arm about a center pivot axis at a rotation speed;
 - a water supply providing input water to the sprinkler arm;
 - a plurality of control valves each provided on the sprinkler arm upstream of a subset of the plurality of spaced apart nozzles;
 - a controller comprising memory and a processor running software code or programs stored in the memory to provide a valve operation that, for each of a plurality of sequential valve duty cycles, includes generating a valve pattern defining a group of the plurality of spaced apart nozzles to discharge the input water from the sprinkler arm, wherein the controller is communicatively linked to the control valves and transmits control signals to the control valves causing the control valves associated with the group of the plurality of spaced apart nozzles to open; and
 - a location monitor on the sprinkler arm determining a current geographic location of the sprinkler arm,wherein the controller generates the valve pattern based on both the current geographic location and an irrigation plan defining a first irrigation zone and a second irrigation zone, the first irrigation zone being assigned a first application depth and the second irrigation zone

being assigned a second application depth differing from the first application depth,

wherein the sprinkler arm is positioned by rotation about the center pivot axis to concurrently extend over the first and second irrigation zones for a plurality of the valve duty cycles, and

wherein the group of nozzles defined by the valve pattern differs for each sequential pair of the valve duty cycles.

Rejection

Claims 1, 4–11, and 34–37 are rejected under 35 U.S.C. § 103 as unpatentable over McCann (US 5,246,164, issued Sept. 21, 1993).

ANALYSIS

Independent Claim 1 and Dependent Claims 4–11

The Examiner finds that “McCann fails to specifically disclose wherein the group of nozzles defined by the valve pattern differs for each sequential pair of the valve duty cycles,” but, otherwise, teaches the center pivot irrigation as called for by claim 1. Final Act. 2–3. The subject matter not taught by McCann concerns the claimed “controller,” which includes:

a processor running software code or programs stored in the memory to provide a valve operation that, for each of a plurality of sequential valve duty cycles, includes generating a valve pattern defining a group of the plurality of spaced apart nozzles to discharge the input water from the sprinkler arm . . .

wherein the group of nozzles defined by the valve pattern differs for each sequential pair of the valve duty cycles.

Appeal Br. 17 (Claims App.) (emphases added). The Examiner explains that “the essential difference between the claim language and the disclosure of the McCann reference is that the computer program is programmed with a different pattern

every X seconds.” Ans. 4. The Examiner does not offer further evidence to remedy the deficiency in McCann’s teachings. Rather, the Examiner reasons:

it would have been obvious to one of ordinary skill in the art to modify the process taught by Mc[C]ann (essentially an irregular map, wherein each valve/nozzle group is individually controlled . . .) to change the output for each sequential pair of duty cycles as a matter of obvious design choice.

Final Act. 3. The Examiner’s reasoning is based on a definition of the term “valve duty cycles” as one of zone-based or time-based and an explanation of how one of ordinary skill in the art may change McCann’s system to correspond to the claimed system. *See id.* at 3, 6; Ans. 3–7. More specifically, the Examiner explains:

dividing McCann’s map of [F]igure 6 into quarters with an inner and outer zone and defining the duty cycle as each quarter/time to traverse a quarter, one of ordinary skill in the art would recognize that planting four different groups in each quarter of land defined by a duty cycle, and having different watering requirements for each area, would have been *wholly capable* and *obvious* to the system of McCann.

Final Act. 3 (emphasis added).

The Appellant argues that the Examiner’s proffered meaning of the term “valve duty cycles” is improper and the Examiner’s reasoning is based on impermissible hindsight. *See* Appeal Br. 9–13; Reply Br. 2–7. As for the latter, the Appellant specifically argues that the reasoning is improperly based on teachings from the Specification of the present application and the capability of McCann’s controller to be programmed as claimed. *See* Appeal Br. 13. The Appellant’s arguments are persuasive.

First, one of ordinary skill in the art would view the claim term “valve duty cycle,” in light of the Specification, as time-based, i.e., a set time period pertaining to the open/closed state of a valve. Indeed, the term “valve duty cycle” is described in the Specification in every instance as time-based, e.g., paragraph 42:

The operating period may be labeled a “valve duty cycle” and stored as shown at 178 in the memory 160. The valve duty cycle 178 may be varied to implement the irrigation system 100 with a time period in the range of 20 to 120 seconds typically being useful and with a 30 second time period being used in some of the examples provided herein.

See also Spec. ¶¶ 9 (“[For example], each valve duty cycle such as a time period in the range of 20 to 90 seconds or the like.”), 103 (“For example, 30 seconds may be used as a duty cycle.”). The Specification does not support the notion that one of ordinary skill in the art would understand the term “valve duty cycle” as zone-based. And, the Examiner fails to adequately explain how one of ordinary skill in the art, upon reading the Specification, would understand the term “valve duty cycle” as anything other than time-based.

Second, the Examiner’s rationale is supported by applying sections to McCann’s zonal irrigation map (e.g., sequential quadrants) (Ans. 7), but fails to adequately explain on the record how each quadrant corresponds to a “valve duty cycle” as properly construed, i.e., a set time period pertaining to the open/closed state of a valve. Accordingly, we determine that the Examiner’s rationale fails to account for the controller as called for in claim 1.

Thus, we do not sustain the Examiner’s rejection of independent claim 1 and claims 4–11, which depend therefrom, as unpatentable over McCann.

Independent Claim 34 and Dependent Claims 35–37

Identical to claim 1, claim 34 recites:

a processor running software code or programs stored in the memory to provide a valve operation that, for each of a plurality of sequential valve duty cycles, includes generating a valve pattern defining a group

of the plurality of spaced apart nozzles to discharge the input water from the sprinkler arm

Appeal Br. 19 (Claims App.) (emphases added). Claim 34 also recites “wherein the controller retrieves hysteresis for each of the valves and generates the valve pattern based on the hysteresis, and wherein the hysteresis provides an on and off history of each of the valves for a predefined number of the valve duty cycles.” *Id.*

The Examiner’s rejection of independent claim 34 relies on McCann to teach the claimed controller. *See* Final Act. 5. However, the Examiner fails to explain how McCann’s controller teaches a plurality of sequential valve duty cycles as part of its control scheme. To the extent that the Examiner may have relied on reasoning provided for rejection 1 for the rejection of claim 34 such has not been stated on the record.

Thus, we do not sustain the Examiner’s rejection of independent claim 34 and claims 35–37, which depend therefrom, as unpatentable over McCann.

DECISION

We REVERSE the Examiner’s decision rejecting claims 1, 4–11, and 34–37.

REVERSED