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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte PETER A. TORRIONE

Appeal 2019-006595
Application 15/251,940
Technology Center 3600

Before STEFAN STAICOVICI, EDWARD A. BROWN, and MICHAEL L. HOELTER, *Administrative Patent Judges*.

BROWN, *Administrative Patent Judge*.

DECISION ON APPEAL

Pursuant to 35 U.S.C. § 134(a), Appellant[1] appeals from the Examiner's decision to reject claims 1–12 and 14–16.[2] We have jurisdiction under 35 U.S.C. § 6(b).

We reverse.

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[1] We use the word "Appellant" to refer to "applicant" as defined in 37 C.F.R. § 1.42. Appellant identifies the real party in interest as Covar Applied Technologies, Inc. Appeal Br. 3.

[2] Claim 13 is cancelled. Appeal Br. (Claims App.).

CLAIMED SUBJECT MATTER

Claims 1, 11, and 12 are independent. Claim 1, reproduced below, illustrates the claimed subject matter:

> 1. A system for monitoring a volume of drilling cuttings, the system comprising:
> a shaker table having an adjustable angle relative to level and an adjustable vibration speed;
> at least one processor; and
> at least one camera configured to monitor said shaker table, wherein the camera is operably connected to the processor and wherein the processor is configured to identify drill cuttings and estimate the volume of the cuttings, and wherein the angle or speed of the shaker table is automatically adjusted based on the estimated volume of the cuttings.

Appeal Br. (Claims App.).

REJECTIONS ON APPEAL

Claims 1–5, 7–12, 14, and 16 are rejected under 35 U.S.C. § 103 as unpatentable over Graves (US 2014/0333754 A1, published Nov. 13, 2014) and Smith (US 2015/0013448 A1, published Jan. 15, 2015).

Claims 6 and 15 are rejected under 35 U.S.C. § 103 as unpatentable over Graves, Smith, and Aldred (US 2011/0220410 Al, published Sept. 15, 2011).

ANALYSIS

Claims 1–5, 7–12, 14, and 16 over Graves and Smith

Claims 1 and 11 are both directed to a system for monitoring a volume of drilling (drill) cuttings, and recite the limitation, "the angle or speed of the shaker table is automatically adjusted *based on the estimated*

volume of the cuttings." Appeal Br. (Claims App.) (emphasis added). Claim 12 is directed to a method of estimating a volume of drill cuttings exiting a well and recites the similar limitation of "adjusting automatically the angle or speed of the shaker table *based on the estimated volume of the cuttings*." *Id.* (emphasis added). As for claims 1, 11, and 12, the Examiner finds that Graves discloses a system for monitoring a volume of drill cuttings, comprising, in part, a shaker table (shaker 104) and a processor (processor 130) configured to identify, and estimate the volume of the drill cuttings. Final Act. 3 (citing Graves ¶¶ 15–20, Fig. 1). The Examiner concedes that Graves does not disclose that "the angle or speed of the shaker table is automatically adjusted based on the estimated volume of the cuttings." *Id.* at 3–4.

The Examiner relies on Smith as teaching automatically adjusting an angle or a speed of a shaker table based on information compiled by a processor. Final Act. 4 (citing Smith ¶¶ 27, 29, 47, 50). The Examiner finds that the combination of Graves and Smith discloses adjusting the angle or speed based on the estimated volume of the cuttings, explaining that "Graves discloses the data gathering and analysis of the estimated volume of cuttings; Smith discloses adjustments made based on gathered data." *Id.* The Examiner concludes that it would have been obvious to one of ordinary skill in the art to configure Graves's system to automatically adjust the angle or speed of the shaker table based on information Graves compiled, as taught by Smith, "to reduce costs by maximizing fluid reclamation." *Id.*

Appellant contends that neither Graves nor Smith discloses automatically adjusting the angle or speed of the shaker table based on the estimated volume of the cuttings. Appeal Br. 10. Appellant also contends

that the Examiner's stated motivation to combine (i.e., "maximizing fluid reclamation") is unrelated to the volume of the drill cuttings themselves. *Id.* at 12.

Graves discloses monitoring downhole cuttings 112 deposited on a shaker 104 with an imaging device 120. Graves ¶ 18, Fig. 1. Imaging device 120 can be connected to a data acquisition system 152 and a computer to "measure and determine characteristics of the cuttings 112, such as size, volume, shape, etc. The live data can be analyzed in real-time . . . to provide . . . the volume of the cuttings 112 coming over the shaker 104." *Id.* ¶ 20 (boldface omitted).

Appellant contends that Graves fails to teach that the shaker table is adjustable. Appeal Br. 11. Appellant also points out that Graves discloses that the drill cuttings are monitored so that an operator may make changes downhole. *Id.* at 12. We note Graves describes, "[t]he changes in . . . volume of the [downhole] cuttings can be correlated to a number of operational conditions." Graves ¶ 63.

Appellant contends that Smith does not teach or suggest adjusting the shaker table based on the volume of the drill cuttings, but instead, teaches adjusting the shaker table in response to the drilling fluid. Appeal Br. 12–13 (citing Smith ¶ 29). Appellant also contends that "Smith, like Graves, teaches only [downhole] adjustment in response to differences 'between the actual and expected weights' of the drill cuttings." *Id.* at 13 (quoting Smith ¶ 28).

Smith discloses a system in which a cuttings and drilling fluid mixture flows into and out of a shale shaker screen 1 and the cuttings are discharged into a trough 2. Smith ¶ 30, Fig. 3. Smith discloses estimating the amount

and volume of the cuttings within the trough. *Id.* ¶¶ 45, 48. Smith explains, "[a] notable difference between the actual and expected weights of natural cuttings within the trough may indicate that downhole conditions, i.e., geology, drilling depth, drilling speed, borehole size, etc., are not as expected." *Id.* ¶ 28. Regarding adjustment of the shaker, Smith discloses:

> *A percentage of fluid on the discharged cuttings within the trough higher than an acceptable threshold could also indicate various problems.* For example, a greater than expected amount of fluid could indicate an inefficiency of the shakers that could be corrected by various adjustments, such as changes to *screen desk angle*, *vibration*, G-force and cuttings conveyance velocity. Such adjustments would reduce costs by maximizing fluid reclamation.

Id. ¶ 29 (emphasis added).

According to the Examiner, Smith explains that shaker table adjustments "can be necessary because of fluid levels present in the discharge cuttings and thus the shaker table." Ans. 5 (citing Smith ¶ 29). The Examiner acknowledges that "Graves does not explicitly address fluid levels with the cuttings discharge," but, nonetheless, contends that "Smith makes it clear that such issues do indeed occur." *Id.* Therefore, the Examiner submits, adding Smith's shaker table adjustments to Graves is an obvious combination, "as Smith remedies what Graves is simply not addressing but something well-known, in the art, to occur." *Id.*

However, paragraph 29 of Smith describes only that the shaker table can be adjusted when the percentage of fluid on the cuttings within the trough is too high. We agree with Appellant that, if Graves were modified based on this teaching, "the combination would contemplate adjusting the

shaker table based on 'amount of fluid' as opposed to the 'estimated volume of cuttings,'" as claimed. Reply Br. 4.

The Examiner also submits, "[a]s both Graves and Smith teach evaluating drilling cuttings, evaluating such by a processor, and then taking some type of corrective action when anomalies are detected, the skilled artisan would readily look at both references to find a better solution to all encountered issues." Ans. 6. The Examiner submits that the proposed modification of Graves to include Smith's shaker table adjustments would not prevent Graves from functioning as taught, and would add more flexibility to Graves's system. *Id.*

However, Graves and Smith teach evaluating drill cuttings, at different locations, both for the purpose of monitoring downhole conditions. It is not apparent how adjusting Graves's shaker table angle or speed would, by itself, provide a corrective action to an undesired downhole condition. It is also not clear how this adjustment would be desirable in the procedure taught by Graves for determining the volume of cuttings on the shaker table. The Examiner does not sufficiently show that it would be desirable to somehow change the volume of cuttings on the shaker table in Graves for any reason. To the contrary, Graves teaches that information regarding the volume of cuttings coming over the shaker table is needed to determine changes in the volume, which can then be correlated to downhole conditions, which can then be corrected. *See* Graves ¶ 63. Nor does the Examiner adequately show that the determined volume of drill cuttings on the shaker table in Graves relates to any problem with the shaker table itself, let alone that changing this volume would address such problem.

The Examiner also submits that Smith explains "there is a direct relationship between the volume of drill cuttings and . . . maximizing fluid reclamation" (Ans. 6 (citing Smith ¶ 29)) and "[b]oth Graves and Smith analyze cuttings and explain the relationship between the cuttings data and drilling fluid" (*id.* at 7).

We disagree that paragraph 29 of Smith discloses this "direct relationship." In fact, paragraph 29 does not mention the volume of the drill cuttings. Furthermore, the Examiner does not establish with evidence that the percentage of fluid on the discharged cuttings within the trough in Smith is directly related to the volume of cuttings on the shaker. For example, the Examiner does not show that decreasing the percentage of fluid on the discharged cuttings within the trough would directly affect the volume of cuttings on the shaker, much less identify this effect. Appellant states, "one could change the angle or vibration of the shaker table such that more fluid flows and is reclaimed as Smith teaches *without the location of the heavier, less mobile, solid volume of cuttings on the screen moving (or at least moving much)*." Reply Br. 5 (emphasis added). According to this statement, adjusting the angle or speed of Graves's shaker table for the purpose of changing the percentage of fluid on the discharged cuttings within the trough would be expected to *not* significantly affect the volume of cuttings on the shaker table. This implies that there is no "direct relationship" between the percentage of fluid on the discharged cuttings within the trough and the volume of cuttings on the shaker. The Examiner provides no persuasive evidence to the contrary.

For the above reasons, the Examiner has not articulated an adequate reason with a rational underpinning to modify Graves's system in view of

Smith such that either the angle or speed of the shaker table is automatically adjusted based on the estimated volume of the cuttings on the shaker table, as required by claims 1, 11, and 12. Thus, we do no sustain the rejection of claims 1, 11, and 12, and dependent claims 2–5, 7–10, 14, and 16, as unpatentable over Graves and Smith.

Claims 6 and 15 over Graves, Smith, and Aldred

The Examiner's reliance on Aldred in rejecting claims 6 and 15 does not cure the deficiency in the rejection of parent claims 1 and 12, respectively. Final Act. 5. Accordingly, we do no sustain the rejection of claims 6 and 15 as unpatentable over Graves, Smith, and Aldred for the same reasons as for claims 1 and 12.

DECISION SUMMARY

In summary:

Claim(s) Rejected	**35 U.S.C. §**	**Reference(s)/Basis**	**Affirmed**	**Reversed**
1–5, 7–12, 14, 16	103	Graves, Smith		1–5, 7–12, 14, 16
6, 15	103	Graves, Smith, Aldred		6, 15
Overall Outcome				1–12, 14–16

REVERSED