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UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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*Ex parte* NEATO ROBOTICS, INC.  
Patentee<sup>1</sup>

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Appeal 2019-002571  
Application 15/459,741  
Patent US 8,996,172 B2  
Technology Center 3900

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Before ALLEN R. MacDONALD, MICHELLE R. OSINSKI, and  
CYNTHIA L. MURPHY, *Administrative Patent Judges*.

PER CURIAM

DECISION ON APPEAL

The application on appeal (Reissue Application) seeks a broadened reissue of U.S. Patent 8,996,172 B2 (Issued Patent) which matured from U.S. Patent Application 11/780,017 (Patent Application). The Patentee appeals from the Examiner's rejection of claims 27–52 under 35 U.S.C. § 251 as attempting to recapture subject matter surrendered during prosecution of the Issued Patent. (*See* Final Action 10.)

We AFFIRM.<sup>2</sup>

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<sup>1</sup> The listed assignee of US 8,996,172 B2 (Neato Robotics, Inc.) is identified as the real party in interest. (*See* Appeal Br. 3.)

<sup>2</sup> We have jurisdiction over this appeal under 35 U.S.C. §§ 6(b) and 134.

## BACKGROUND

Claims issued in the Issued Patent (Issued Claims) recite a “robotic device” comprising “an optical assembly,” and claims pending in the Reissue Application (Reissue Claims) also recite a “robotic device” comprising “an optical assembly.”

A robotic device “can be used for home and commercial applications, such as cleaning.” (Issued Patent, 1:23–25.) When a robotic device is used for cleaning, it “often must be operative to navigate around an environment with no, or minimal, input from a user or an operator.” (*Id.* at 1:25–27.) To this end, a sensor system can be provided for “enabling and facilitating robot navigation.” (*Id.* at 1:28–29.) In a nutshell, the sensor system acquires data regarding the relative position of a stationary object (e.g., a wall) in the operating environment (e.g., the room being cleaned), and a navigation-controlling module relies upon this sensor-acquired data to autonomously navigate the robotic device. (*See id.* at 6:30–33, 10:50–52.)

The Issued Patent discloses a robotic device in which the sensor system is an “optical assembly” that provides “distance data” to a navigation-controlling module. (Issued Patent, 19:4–5.) More particularly, the optical assembly employs “laser distance sensor (LDS) technology” to acquire this distance data. (*Id.* at 3:35.) The LDS components at the heart of this technology are a **collimated-light** source (e.g., a laser) and a **sensor**. (*See id.* at 4:54–55.) The source projects collimated light into the operating environment, and, if a stationary object is within the optical assembly’s field of view, light incident on the stationary object is detected by the sensor. (*See e.g., id.* 5:62–63, Fig. 2.)

The Issued Patent discloses that the optical assembly can be afforded a revolving field of view by attaching the source/sensor components to a **rotating mount**. (See Issued Patent 7:62–66, 17:32–39.) The rotational movement of this rotating mount can be **unidirectional** (360° rotations) or **non-unidirectional** (clockwise and counterclockwise arc rotations). (See *id.* at 9:5–17.) The Issued Patent indicates that, if the source/sensor components are attached to a rotating mount, a **rotary encoder** “may be desirable in many instances.” (*Id.* at 16:52–53.)

The Issued Patent discloses that the optical assembly can be provided with “‘on-board’ computational functionality” by “various types of computing hardware.” (Issued Patent, 9:44–47.) This computing hardware can consist of a **computer-readable media** and/or an **electronics package**. (See *id.* at 6:18–29, 9:44–51, 16:26–37.) And this computing hardware can include instructions related to an optical angle (e.g., an **optical-angle** instruction), the orientation of the rotating mount (e.g., a **mount-orientation** instruction), simultaneous localization and mapping (e.g., a **SLAM** instruction), and eliminating redundancies (e.g., a **non-redundant** instruction). (See *id.* at 1:23–38, 4:57–62, 5:62–6:50, 16:50–62.)

As indicated above, an LDS optical assembly includes a **collimated-light** source (e.g., a laser) and a **sensor**. (See Issued Patent, 4:54–55.) The Issued Patent discloses that an LDS optical assembly can also include a **diffuse light** source (e.g., an LED). (See *id.* at 7:1–4.) Thus, the Issued Patent discloses that the robotic device can have a laser-only optical assembly (i.e., an optical assembly with a **collimated-light** source but *not* a **diffuse-light** source), or, alternatively, a laser-LED optical assembly (i.e., an

optical assembly with both a **collimated-light** source and a **diffuse-light** source).

The Issued Patent discloses that the robotic device’s optical assembly can employ a “triangulation” method “to detect distance to objects.” (Issued Patent, 6:51–54.) With the triangulation method, the sensor (e.g., a *multi-pixel* sensor) is operative to detect the angle of light reflected from the object. (*See id.* at 4:57–62, 5:62–6:50, 16:50–62.) The Issued Patent discloses that a laser-only optical assembly can employ the triangulation method of distance detection. (*See id.* at 5:61–64, Fig. 1.)

The Issued Patent discloses that the robotic device’s optical assembly can instead employ an “amplitude” method “to detect distance to objects.” (Issued Patent, 6:51–57.) With the amplitude method, the sensor detects the “amplitude” of the light reflected from the object. (*Id.* at 6:61–62.) The Issued Patent discloses that an optical assembly with “independent sources of light of differing types” (e.g., a laser-LED optical assembly) can overcome “shortcoming[s]” indigenous to the amplitude method of distance detection. (*Id.* at 7:1–4.)

Thus, the Issued Patent discloses that the robotic device can have a laser-only optical assembly employing the triangulation method of distance detection; and the Issued Patent discloses that the robotic device can instead have a laser-LED optical assembly employing the amplitude method of distance detection.

## PRINCIPLES OF LAW

The Patent Act provides an avenue for a patentee to seek reissue of a patent under certain circumstances:

Whenever any patent is, through error, deemed wholly or partly inoperative or invalid, by reason of a defective specification or drawing, or by reason of the patentee claiming more or less than he had a right to claim in the patent, the Director shall, on the surrender of such patent and the payment of the fee required by law, reissue the patent for the invention disclosed in the original patent.

35 U.S.C. § 251. An inventor may not, however, recapture through reissue subject matter that was surrendered to obtain allowance of the issued claims. (*In re Mostafazadeh*, 643 F.3d 1353, 1358 (Fed. Cir. 2011).)

“Application of the recapture rule is a three step process.” (*Mostafazadeh*, 643 F.3d at 1358.) First, “we determine whether and in what aspect the reissue claims are broader than the patent claims.” (*In re Youman*, 679 F.3d, 1335, 1343 (Fed. Cir. 2012).) Second, we “determine whether the broader aspects of the reissue claims relate to surrendered subject matter.” (*In re Clement*, 131 F.3d 1464, 1468–69 (Fed. Cir. 1997).) Third, we “determine whether the surrendered subject matter has crept into the reissue claim.” (*Id.* at 1469.) “Violation of the rule against recapture may be avoided under this final step of the analysis if the reissue claims ‘materially narrow’ the claims relative to the original claims such that full or substantial recapture of the subject matter surrendered during prosecution is avoided.” (*Mostafazadeh*, 643 F.3d at 1358.) The narrowing must, therefore, relate to the surrendered subject matter. (*Id.* at 1359.)

The recapture rule does not apply to reissue claims directed to “overlooked aspects” such as “additional *inventions embodiments/species* not originally claimed.” (*Mostafazadeh*, 643 F.3d at 1360.)<sup>3</sup>

#### SUMMARY

We conclude that the Reissue Claims are not directed to “overlooked aspects,” and therefore the recapture rule does apply. We also conclude that when the recapture rule is applied, it reveals that the Reissue Claims are an attempt to recapture subject matter that was intentionally surrendered during prosecution of the Issued Patent. In short, the recapture rule applies, and the Reissue Claims violate the recapture rule.

The Patentee’s arguments, for the most part, are premised upon the Reissue Claims and the Issued Claims being directed to “different” inventions. (Appeal Br. 5.) According to the Patentee, the Reissue Claims are directed to a “main” invention involving a laser-only optical assembly employing the triangulation method of distance detection; and the Issued Claims are directed to a different “minor” invention involving a laser-LED optical assembly employing the amplitude method of distance detection. (*See id.* at 5, 14.)

We do not necessarily disagree with the Patentee’s premise that the Reissue Claims and the Issued Claims are directed to different inventions. We agree that the Reissue Claims could read on a laser-only optical

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<sup>3</sup> Overlooked aspects are not merely incidental features of the originally claimed invention. (*See Mostafazadeh*, 643 F.3d at 1358.) Rather, they are distinct elements which “were never claimed and thus never surrendered.” (*Youman*, 679 F.3d at 1347.)

assembly employing the triangulation method of distance detection; and we agree that the Issued Claims could not read on a laser-only optical assembly employing the triangulation method of distance detection. And it is possible that the Reissue Claims and the Issued Claims are directed to different inventions.

However, for the purposes of this appeal, it does not really matter whether the Reissue Claims and the Issued Claims are directed to different inventions.

Whether the Reissue Claims are directed to a different invention than the Issued Claims does not factor into our overlooked-aspects analysis. In our overlooked-aspects analysis, the important inquiry is whether the Reissue Claims are directed to an invention different from those previously claimed. They are not. A laser-only optical assembly employing the triangulation method of distance detection (i.e., the “different” invention to which the Reissue Claims are allegedly directed) was an invention encompassed by claims pursued during prosecution of the Issued Patent.

Whether the Reissue Claims are directed to a different invention than the Issued Claims factors only tangentially into our recapture-rule analysis. In the first step of the recapture rule, we compare the Reissue Claims to the Issued Claims. But this comparison is done only to determine whether the Reissue Claims are broader in scope than the Issued Claims, and, if so, to identify the aspect(s) responsible for this broadness. A broader aspect of the Reissue Claims is that they could read on a laser-only optical assembly employing the triangulation method of distance detection, and the Issued Claims could not. This broader aspect exists regardless of whether or not

the Reissue Claims are directed to a “different” invention than the Issued Claims.

The important inquiry in our recapture-rule analysis is whether the Reissue Claims attempt to claim an invention (different or not) that was intentionally surrendered during prosecution of the Issued Patent. They do. A laser-only optical assembly employing the triangulation method of distance detection (i.e., the “different” invention to which the Reissue Claims are allegedly directed) was an invention covered by claims pursued during prosecution of the Issued Patent. And this allegedly “different” invention was intentionally surrendered during prosecution when a limitation requiring a **diffuse light** source was introduced to overcome a prior art rejection.

Thus, inasmuch as the Patentee’s “main” invention is a laser-only optical assembly employing the triangulation method of distance detection, this “main” invention was not overlooked, and was intentionally surrendered, during prosecution of the Issued Patent.

#### REISSUE CLAIMS

The Reissue Application contains claims 27–52, with claims 27, 38, and 39 being independent claims. Reissue Claim 27 is presented below.<sup>4</sup>

[Reissue Claim] 27. A robotic device comprising:  
a drive mechanism to move said robotic device;  
an electronics module disposed on said robotic device to provide instructions to said drive mechanism to position the robotic device in an operating environment;

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<sup>4</sup> Our quotations to the Reissue Claims correspond to the Claims Appendix on pages 19–29 of the Appeal Brief, with our annotations.

an optical assembly disposed on said robotic device to provide distance data to said electronics module, said distance data related to a position of the robotic device relative to a stationary object in the operating environment and influencing the instructions provided to said drive mechanism;

said optical assembly comprising:

a source providing **collimated light** output in an emitted light beam;

a detector **sensor** operative to detect a reflected light beam from the emitted light beam incident on the stationary object in the operating environment;

a **rotating mount** to which said source and said detector sensor are attached;

a *rotary encoder* mounted to detect rotational movement of the rotating mount and provide encoder signals to the electronics module representative of the angular orientation of the rotating mount;

a non-transitory, *computer readable media* including instructions for

computing the *angle* of the reflected light beam to the emitted light beam to determine a distance between the rotating mount and the stationary object,

determining a direction of the stationary object relative to the robotic device using the encoder signals representative of the angular *orientation* of the rotating *mount*, and

applying a simultaneous localization and mapping (*SLAM*) algorithm to the distance and the direction to determine a location of the robotic device and to map the operating environment.

Reissue Claim 27, and also Reissue Claims 38 and 39, recite a robotic device in which an optical assembly is disposed “to provide distance data” (“related to a position of the robotic device relative to a stationary object in [an] operating environment”) to the robotic device’s navigation-controlling

module. Reissue Claims 38 and 39 more particularly recite that the robotic device is “for cleaning.”

Reissue Claim 27, and also Reissue Claims 38 and 39, recite that the optical assembly comprises a **collimated-light** source and a **sensor**, but do not require a **diffuse light** source. The Reissue Claims could read, therefore, on a robotic device having a laser-only optical assembly.<sup>5</sup>

Reissue Claim 27, and also Reissue Claims 38 and 39, recite that the optical assembly’s computing hardware includes a ***computer readable media***. Reissue Claim 38, and also claims depending from Reissue Claims 27 and 39 (Reissue Claims 28 and 43), recite that the optical assembly’s computing hardware also includes an ***electronics package***. The Reissue Claims could read, therefore, on computing hardware that includes both a ***computer readable media*** and an ***electronics package***.<sup>6</sup>

Reissue Claim 27, and also Reissue Claims 38 and 39, recite a **rotating mount**, but do not specify the rotational direction of the rotating mount’s movement. The Reissue Claims could read, therefore, on both a ***unidirectional*** rotating mount and a ***non-unidirectional*** rotating mount.

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<sup>5</sup> For the purposes of this appeal, we need not discuss the Reissue Claims’ coverage of an optical assembly with both a collimated-light source and a diffuse-light source (a laser-LED optical assembly).

<sup>6</sup> Reissue Claim 38, and also Reissue Claims 28 and 43, recite that the ***electronics package*** is “attached to said rotating mount” and executes “digital processing.” As such, the Patentee’s contention that these features of the ***electronics package*** are incompatible with the optical assembly recited in the Reissue Claims (*see* Appeal Br. 9; 17, *see also* Reply Br. 4) is inconsistent with the express language of the Reissue Claims themselves.

Reissue Claim 38 recites that the sensor is a *multi-pixel* sensor that includes “an array of pixels.” Reissue Claims 27 and 38 recite an *optical-angle* instruction for “computing the angle of the reflected light beam to the emitted light beam to determinate a distance between the rotating mount and the stationary object.” According to the Patentee, a *multi-pixel* sensor and an *optical-angle* instruction are defining characteristics of the triangulation method of distance detection. (See Appeal Br. 13, 16, 17.) In other words, according to the Patentee, the Reissue Claims containing these limitations read only on an optical assembly employing the triangulation method of distance detection.<sup>7</sup>

Reissue Claim 27, and also Reissue Claims 38 and 39, recite a *rotary encoder* to “provide encoder signals to the electronics module representative of the angular orientation of the rotating mount,” and a *mount-orientation* instruction for “determining a direction of the stationary object relative to the robotic device using the encoder signals representative of the angular orientation of the rotating mount.” The Reissue Claims require, therefore, the optical assembly to include a *rotary encoder* and a *mount-orientation* instruction.

Reissue Claim 27, and also Reissue Claims 38 and 39, recite a *SLAM* instruction (for “applying a simultaneous localization and mapping (SLAM) algorithm to the distance and the direction to determine a location of the robotic device and to map the operating environment”). Reissue Claims 38 and 39 also recite a *non-redundant* instruction (for “directing the robotic

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<sup>7</sup> For the purposes of this appeal, we need not discuss the Reissue Claims’ coverage of non-triangulation methods of distance detection.

device to avoid redundant cleaning of the operating environment”). The Reissue Claims require, therefore, the optical assembly to include a **SLAM** instruction and a ***non-redundant*** instruction.

Thus, the Reissue Claims are broad enough to read on a robotic device in which a laser-only optical assembly comprises:

- a **collimated-light** source;
- a ***multi-pixel*** sensor;
- a **unidirectional rotating mount**;
- a ***rotary encoder***;
- computing hardware including both a ***computer readable media*** and an **electronics package**;
- an ***optical-angle*** instruction
- a ***mount-orientation*** instruction,
- a **SLAM** instruction; and
- a ***non-redundant*** instruction.

The Reissue Claims could also read on a **non-unidirectional** rotating mount and/or computing hardware **without an electronics package**.

#### ISSUED CLAIMS

The Issued Patent contains claims 1–25, with claims 1, 10, and 20 being independent. Issued Claim 10 is reproduced below.<sup>8</sup>

[Issued Claim] 10. A robotic device comprising:  
a drive mechanism to move said robotic device;

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<sup>8</sup> Our quotations to the Issued Claims correspond to column 18, line 26 through column 20, line 39 of the Issued Patent, with our annotations.

an electronics module disposed on said robotic device to provide instructions to said drive mechanism to position the robotic device in an operating environment;

an optical assembly disposed on said robotic device to provide distance data to said electronics module, said distance data related to a position of the robotic device relative to a stationary object in the operating environment and influencing the instructions provided to said drive mechanism; said optical assembly comprising:

- a source providing **collimated light** output;
- a source providing **diffuse light** output;
- a **sensor** operative to detect the outputs incident on the stationary object in the operating environment;
- a **rotating mount** to which said sources and said sensor are attached; said rotating mount being rotatable through an arbitrary number of ***uni-directional*** rotations; and
- an ***electronics package*** attached to said rotating mount and coupled to said sources and said sensor; said electronics package executing digital processing to process data acquired by said sensor from collimated and diffuse light hitting said stationary object as said mount rotates to generate the distance data.

Issued Claim 10 recites that the optical assembly comprises a **collimated-light** source and a **diffuse-light** source, and Issued Claims 1 and 20 likewise require a **collimated-light** source and a **diffuse-light** source.

The Issued Claims could not read, therefore, on a robotic device with a laser-only optical assembly (i.e., having a **collimated-light** source but not a **diffuse-light** source), and thus could not read on a laser-only optical assembly employing a triangulation method of distance detection. However, as indicated above, the Reissue Claims are broad enough to read on a robotic

device in which a laser-only optical assembly employs a triangulation method of distance detection.

Thus, a broader aspect of the Reissue Claims is that they are broad enough to read on a robotic device with a laser-only optical assembly employing the triangulation method of distance detection, while the Issued Claims are not.

### ORIGINAL CLAIMS

Issued Claims 1–25 in the Issued Patent matured from claims 1–25 originally filed with the Patent Application, with claims 1, 10, and 20 being independent claims. Independent claim 10, as originally filed, is reproduced below.<sup>9</sup>

[Original Claim] 10. A robotic device comprising:

a drive mechanism;

an electronics module to provide instructions to said drive mechanism to position the robotic device in an operating environment;

an optical assembly to provide distance data to said electronics module, said distance data related to a position of the robotic device relative to an object in the operating environment and influencing the instructions provided to said drive mechanism; said optical assembly comprising:

a source providing **collimated light** output;

a **sensor** operative to detect the output incident on an object in the operating environment;

a **rotating mount** to which said source and said sensor are attached; said rotating mount being rotatable

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<sup>9</sup> Our quotations to the Original Claims correspond to the claims filed in the Patent Application on July 19, 2007, with our annotations.

through an arbitrary number of *uni-directional* rotations;  
and

an *electronics package* attached to said rotating mount and coupled to said source and said sensor; said electronics package executing digital processing to process data acquired by said sensor as said mount rotates to generate the distance data.

Original Claim 10 recited a robotic device comprising an optical assembly “to provide distance data” (“related to a position of the robotic device relative to an object in the operating environment”) to the robotic device’s navigation-controlling module.

Original Claim 10 recited that the optical assembly comprised a **collimated-light** source. This claim language requires the robotic device’s optical assembly to have a collimated-light source, but neither requires nor precludes the robotic device’s optical assembly from having a diffuse-light source. Consequently, Original Claim 10 covered a robotic device having a laser-only optical assembly; and Original Claim 10 also covered a robotic device having a laser-LED optical assembly.

Original Claim 10 recited a **sensor** that is “operative to detect the output incident on an object in the operating environment.” This claim language would encompass a sensor, such as a *multi-pixel* sensor, that is operative to detect the angle of light reflected from the object (i.e., the triangulation method of distance detection); and this claim language would encompass a sensor that is operative to detect the amplitude of light reflected from the object (i.e., the amplitude method of distance detection).

Original Claim 10 recited a *unidirectional rotating mount* “to which said source and said sensor are attached.” Original Claim 10 does not

preclude a rotary encoder, and, as discussed above, the Issued Patent discloses that a rotary encoder is a desirable accessory when source/sensor components are attached to the rotating mount. Consequently, Original Claim 10 encompassed a **unidirectional rotating mount** accessorized with a ***rotary encoder***.

Original Claim 10 recited an **electronics package**. Original Claim 10 did not preclude the optical assembly's computing hardware from also having a ***computer readable media***. Consequently, Original Claim 10 encompassed computing hardware with both a ***computer readable media*** and an **electronics package**.

Original Claim 10 did not preclude the optical assembly's computing hardware from including an ***optical-angle*** instruction (involving the optical angle detected by the sensor), a ***mount-orientation*** instruction (involving encoder signals produced by a rotary encoder), a ***SLAM*** instruction or a ***non-redundant*** instruction. Consequently, Original Claim 10 encompassed computing hardware (with both a ***computer readable media*** and an **electronics package**) including these instructions.

Thus, Original Claim 10 encompassed a robotic device having a laser-only optical assembly comprising all of the elements required by the Reissue Claims, namely:

- a **collimated-light** source<sup>10</sup>
- a ***multi-pixel sensor***;

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<sup>10</sup> As indicated above, Original Claim 10 also covered an optical assembly having a collimated light source and a diffuse light source (i.e., a laser-LED optical assembly).

- a **unidirectional rotating mount**;
- a ***rotary encoder***; and
- computing hardware including both a ***computer readable media*** and an **electronics package**;
- an ***optical-angle*** instruction
- a ***mount-orientation*** instruction,
- a ***SLAM*** instruction; and
- a ***non-redundant*** instruction.

As indicated above, the Reissue Claims could also read on computing hardware **without an electronics package** and/or a **non-unidirectional** rotating mount. Original Claim 10 did *not* cover computing hardware **without an electronics package**; and Original Claim 10 did *not* cover a **non-unidirectional** rotating mount.

#### PROSECUTION<sup>11</sup>

As discussed above, claims 1–25 were originally filed with the Patent Application, with claims 1, 10, and 20 being independent claims. As also discussed above, Original Claim 10 encompassed both a laser-only optical assembly and a laser-LED optical assembly; and Original Claim 10 encompassed both the triangulation and amplitude methods of distance detection. Thus, Original Claim 10 encompassed a laser-only optical assembly employing the triangulation method of distance detection.

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<sup>11</sup> Our references to “prosecution” correspond to the prosecution of the Patent Application maturing into the Issued Patent, not the prosecution of the Reissue Application.

In a first Office Action, Original Claim 10 was rejected under 35 U.S.C. § 102 as anticipated by Hall.<sup>12</sup> The Examiner found that Hall disclosed a robotic device with an optical assembly comprising, among other things, a collimated-light source and a sensor (but *not* a **diffuse-light** source). (See Patent Application, Office Action mailed March 31, 2011, pages 2–3; see also Hall ¶¶ 36, 46, 47.) In response to this rejection, Original Claim 10 was amended to require the optical assembly to comprise both a **collimated-light** source and a **diffuse-light** source. (See Patent Application, Claims filed September 29, 2011.) Original Claim 10, as once amended, is reproduced below.<sup>13</sup>

[Once-Amended Claim] 10. A robotic device comprising:

- a drive mechanism;
- an electronics module to provide instructions to said drive mechanism to position the robotic device in an operating environment;
- an optical assembly to provide distance data to said electronics module, said distance data related to a position of the robotic device relative to an object in the operating environment and influencing the instructions provided to said drive mechanism; said optical assembly comprising:
  - a source providing **collimated light** output;
  - a source providing **diffuse light** output;
  - a **sensor** operative to detect the outputs incident on an object in the operating environment;
  - a **rotating mount** to which said sources and said sensor are attached; said rotating mount being rotatable

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<sup>12</sup> Hall, US 2010/0020306 A1; published January 28, 2010.

<sup>13</sup> Our quotations to the Once-Amended Claims correspond to the claims filed in the Patent Application on September 29, 2011, with our annotations.

through an arbitrary number of *uni-directional* rotations;  
and

an *electronics package* attached to said rotating mount and coupled to said source and said sensor; said electronics package executing digital processing to process data acquired by said sensor as said mount rotates to generate the distance data.

Once-Amended Claim 10 recited that the optical assembly comprised a **collimated-light** source, and a **diffuse-light** source. In the remarks accompanying this amendment, it was pointed out that “[t]he amended claims recite two sources of light: a source of collimated light and a source of diffuse light.” (Patent Application, Remarks filed September 29, 2011, page 7.)<sup>14</sup>

The **diffuse-light** limitation was added to Original Claim 10 in an effort to overcome a prior art rejection and obtain allowance of the claims. Prior to the **diffuse-light** limitation being added, Original Claim 10 encompassed a robotic device with a laser-only optical assembly employing the triangulation method of distance detection. After the **diffuse-light** limitation was added to overcome a prior art rejection, Original Claim 10 (now Once-Amended Claim 10) no longer covered a robotic device with a laser-only optical assembly, and thus no longer covered a robotic device with a laser-only optical assembly employing the triangulation method of distance detection.

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<sup>14</sup> This **diffuse-light** limitation remained in the claims, and was argued, throughout the rest of prosecution. (See *e.g.*, *id.* Remarks filed March 12, 2012, pages 7, 10; Remarks filed March 26, 2013, pages 7, 12, Remarks filed October 17, 2013, page 7.)

## ANALYSIS

The Patentee argues that the Reissue Claims “are directed to overlooked aspects, and should not be subject to recapture.” (Appeal Br. 5, underlining omitted.) The Patentee alternatively argues that, even if the recapture rule is applied, the Reissue Claims “should not be found to be recapturing surrendered subject matter.” (Appeal Br. 15.) We have carefully considered these arguments, but are not persuaded thereby.

### *Overlooked Aspects*

The recapture rule does not apply to reissue claims directed to “overlooked aspects” such as “additional *inventions/embodiments/species* not originally claimed.” (*Mostafazadeh*, 643 F.3d at 1360.) Here, the Reissue Claims are not directed to an invention/embodiment/species that was not previously claimed.

The Patentee’s position is that the Reissue Claims are directed to a robotic device having a laser-only optical assembly that employs a triangulation method of distance detection. (*See* Appeal Br. 5.) The Original Claims encompassed a robotic device having a laser-only optical assembly that employs a triangulation method of distance detection. More particularly, as discussed above, a robotic device reading on the Reissue Claims was encompassed by the Original Claims, because the Original Claims encompassed a robotic device having a laser-only optical assembly comprising:

- a **collimated-light** source;
- a ***multi-pixel*** sensor;
- a **unidirectional rotating mount**;

- a *rotary encoder*; and
- computing hardware including both a *computer readable media* and an *electronics package*;
- an *optical-angle* instruction
- a *mount-orientation* instruction,
- a *SLAM* instruction; and
- a *non-redundant* instruction.

Thus, the Reissue Claims are not directed to an invention/embodiment/species that was not previously claimed.

The Patentee seems to alternatively contend that a *non-unidirectional* rotating mount is an overlooked aspect. (See Appeal Br. 8; Reply Br. 2–4.) But the Reissue Claims are not directed to a *non-unidirectional* rotating mount, as they could also read on a *unidirectional* rotating mount. Hence, even if a *non-unidirectional* rotating mount is an overlooked aspect, the Reissue Claims are not directed to this allegedly overlooked aspect.

The Patentee likewise seems to alternatively contend that computing hardware *without an electronics package* is an overlooked aspect. (See Appeal Br. 9; Reply Br. 4–5.) But, as discussed above, the Reissue Claims do not preclude computing hardware that includes an *electronics package*. Hence, even if computing hardware *without an electronics package* is an overlooked aspect, the Reissue Claims are not directed to this allegedly overlooked aspect.

Thus, we agree with the Examiner that the Reissue Claims are not directed to overlooked aspects, and, therefore, the recapture rule applies.

*Recapture Rule*

The recapture rule prevents a patentee from recapturing through reissue subject matter that was surrendered to obtain allowance of the issued claims. (*Mostafazadeh*, 643 F.3d at 1358.) Here, the Reissue Claims violate the recapture rule.

The Issued Claims include the **diffuse-light** limitation and the Reissue Claims remove this limitation. The removal of this limitation expands the scope of the Reissue Claims to cover a robotic device with a laser-only optical assembly. A robotic device having a laser-only optical assembly was intentionally surrendered during prosecution of the Issued Patent when the **diffuse-light** limitation was added to overcome a prior art rejection. And, according to the Patentee, the additional limitations in the Reissue Claims have “nothing to do with using a diffuse light source.” (Appeal Br. 14.) This satisfies steps one, two, and three of the recapture rule.

The Patentee does not assert that the Examiner improperly applies the first and second steps of the recapture rule (*see* Appeal Br. 15–17), and, indeed, the record leaves little room for dispute. The Patentee acknowledges (and, in fact, argues) that the Reissue Claims read on a laser-only optical assembly employing a triangulation method of distance detection, but the Issued Claims do not because they include the **diffuse-light** limitation. (*See id.* at 14.)

There is no dispute that the **diffuse-light** limitation was added for the purpose of overcoming a prior art rejection. There is no dispute that Original Claim 10 (without the **diffuse-light** limitation) covered a robotic device with a laser-only optical assembly employing the triangulation

method of distance detection. And there is no dispute that Once-Amended Claim 10 (with the **diffuse-light** limitation) no longer covered a robotic device with a laser-only optical assembly employing the triangulation method of distance detection.

Thus, the Patentee acknowledges (or at least does not dispute) that the Reissue Claims' coverage of an optical assembly without a diffuse light source (e.g., a laser-only optical assembly employing the triangulation method of distance detection) is a broader aspect under step one of the recapture rule, and that this broader aspect relates to surrendered subject matter under step two of the recapture rule.

But the Patentee argues that the Examiner “does not properly apply” the third step of the recapture rule because the Reissue Claims recite “additional limitations” which are “completely ignore[d].” (Appeal Br. 15.) These argued additional limitations are: the *computer readable media*, the *multi-pixel* sensor; the *rotary encoder*, the *optical-angle* instruction, the *mount-orientation* instruction, the *SLAM* instruction; and the *non-redundant* instruction. (See *id.* at 13–14.)<sup>15</sup>

The Patentee seems to be arguing that these additional limitations are “materially narrowing,” and, therefore, the third step saves the Reissue

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<sup>15</sup> The Patentee asserts that “[a]dditional narrowing limitations include limitations directed to the drive mechanism, a robot, and an electronics module for controlling the drive mechanism.” (Appeal Br. 14.) However, Issued Claim 10 recites a “robotic device,” “a drive mechanism to move said robotic device,” and “an electronics module” that “provide[s] instructions to said drive mechanism to position the robotic device in an operating environment.” (Issued Patent 18:66–19:3.) Original Claim 10 likewise recites these or similar limitations.

Claims from impermissible recapture. (Appeal Br. 16.) If so, the Patentee is forgetting a “critical” distinction that must be made when applying the third step of the recapture rule. (*Youman*, 679 F.3d. at 1345.) Specifically, it is critical to “distinguish between instances where an added limitation has been modified versus instances where an added limitation is eliminated in its entirety.” (*Id.*)

Here, the relevant surrender-generating limitation (i.e., the **diffuse-light** limitation causing the surrender of a laser-only optical assembly) “has been eliminated entirely.” (Final Action 11.) Again, according to the Patentee, the additional limitations in the Reissue Claims have “nothing to do with using a diffuse light source.” (Appeal Br. 14.) And the Federal Circuit has rejected the argument that limitations can be “materially narrowing” when they are “unrelated to the surrendered subject matter.” (*Mostafazadeh*, 643 F.3d at 1359.)

Moreover, the Patentee says that the Reissue Claims are directed to a laser-only optical assembly employing a triangulation method of distance detection. (*See* Appeal Br. 14.) This is just another way of saying that the Reissue Claims are directed to surrendered subject matter, because, as indicated above, there is no dispute that an optical assembly without a diffuse light source (e.g., a laser-only optical assembly employing the triangulation method of distance detection) is surrendered subject matter.

Thus, we agree with the Examiner that the Reissue Claims violate the recapture rule.

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### CONCLUSION

We AFFIRM the Examiner's rejection of claims 27–52 under 35 U.S.C. § 251.

| Claims Rejected | Basis           | Affirmed | Reversed |
|-----------------|-----------------|----------|----------|
| 27–52           | 35 U.S.C. § 251 | 27–52    |          |

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a). *See* 37 C.F.R. § 1.136(a)(1)(iv).

AFFIRMED