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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte GREGORY JAMES ALEXANDER ANDRIGO

Appeal 2018-002016
Application 14/694,299
Technology Center 3600

Before EDWARD A. BROWN, BRETT C. MARTIN, and
BRENT M. DOUGAL, *Administrative Patent Judges*.

BROWN, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

Pursuant to 35 U.S.C. § 134(a), Appellant¹ appeals from the Examiner's decision to reject claims 1 and 5–23.² We have jurisdiction under 35 U.S.C. § 6(b).

We AFFIRM IN PART.

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 Top-Co, Inc. Br. 1 (dated June 26, 2017).

² Claims 2–4 are cancelled. Br. 35 (Claims App.).

CLAIMED SUBJECT MATTER

Appellant's disclosure "generally relates to wellbore cementing equipment, and in particular to plug and dart systems deployable as high-pressure fluid barriers in wellbore cementing processes." Spec. ¶ 2.

Claims 1 and 10 are independent. Claim 1, reproduced below, illustrates the claimed subject matter.

1. A wellbore sealing system comprising:
a bottom plug defining a bore therein;
a top plug defining a bore therein; and
a dart retained in the top plug via a shear ring, and being deployable through the bore defined in the top plug and the bore defined in the bottom plug to sealingly engage float equipment abutting the bottom plug.

Br. 35 (Claims App.).

REJECTIONS

Claims 18 and 20 are rejected under 35 U.S.C. § 112(b) as indefinite. Final Act. 4.

Claims 1, 5–14, 16, and 18–21 are rejected under 35 U.S.C. § 103 as unpatentable over Budde³ and Laurel⁴. Final Act. 5.

Claims 15 and 22 are rejected under 35 U.S.C. § 103 as unpatentable over Budde, Laurel, and Coone⁵. Final Act. 8.

Claims 17 and 23 are rejected under 35 U.S.C. § 103 as unpatentable over Budde, Laurel, and Giroux⁶. Final Act. 8.

³ Budde, US 2015/0101801 A1, published Apr. 16, 2015.

⁴ Laurel et al., US 2010/0294503 A1, published Nov. 25, 2010.

⁵ Coone et al., US 5,234,052, issued Aug. 10, 1993.

⁶ Giroux et al., US 6,082,451, issued July 4, 2000.

ANALYSIS

Claims 18 and 20 as indefinite

Claims 18 and 20 both depend from claim 10 and recite the same limitation, “*substantially maintaining pressurization* of the wellbore by a seal between the dart and the float equipment.” Br. 36–37 (Claims App.) (emphasis added). The Examiner determines that the term “substantially” renders claims 18 and 20 indefinite because there is no basis to quantify how much is considered “substantial.” Final Act. 4. Claim 20 additionally recites that “the top plug and bottom plug do not *substantially contribute* to maintenance of pressurization of the wellbore.” Br. 37 (Claims App.) (emphasis added). The Examiner determines that “this range includes situations from where the plugs make no contribution at all to a contribution that might be interpreted as ‘less than half.’” Final Act. 4. The Examiner determines that claim 20 is additionally indefinite because there is no way to accurately ascertain its scope. *Id.*

For claims in an application, “[a] claim is indefinite when it contains words or phrases whose meaning is unclear.” *In re Packard*, 751 F.3d 1307, 1310, 1314 (Fed. Cir. 2014); see *Ex parte McAward*, No. 2015-006416, slip op. at 11 (PTAB Aug. 25, 2017) (precedential) (same). In rejected claims 18 and 20, the term “substantially” is a term of degree or approximation. MPEP § 2173.05(b) (9th ed., rev. 08.2017, Jan. 2018) (Section I Terms of Degree, Section III Approximations). “Claim language employing terms of degree has long been found definite where it provided enough certainty to one of skill in the art when read in the context of the invention.” *Interval Licensing LLC v. AOL, Inc.*, 766 F.3d 1364, 1370 (Fed. Cir. 2014). Accordingly, “[t]he claims, when read in light of the specification and the

prosecution history, must provide objective boundaries for those of skill in the art.” *Id.* at 1371 (citing *Nautilus, Inc. v. Biosig Instruments, Inc.*, 572 U.S. 898, 911 & n. 8 (2014)).

Appellant asserts that the term substantially is “a descriptive term commonly used in patent claims.” Br. 29 (citing *Ecolab, Inc. v. Envirochem, Inc.*, 264 F.3d 1358, 1367 (Fed. Cir. 2001)). Appellant contends that, in *Ecolab*, the court looked to dictionary definitions of the term “substantially” as meaning “considerable in extent” or “largely but not wholly that which is specified.” *Id.* at 29–30. However, Appellant does not indicate clearly that “substantially” should be construed in claims 18 and 20 as having either of these meanings.

Appellant contends that “the [S]pecification supports an understanding of pressurization of the wellbore in the context of the use of a dart, float equipment, a top plug, and a bottom plug.” *Id.* at 30 (citing Spec. ¶¶ 3–9). However, even if these paragraphs may support this general understanding, they do not use the term “substantially” or otherwise describe any objective boundary as to the meaning of this term.

Appellant also contends that claims 18 and 20 are sufficiently clear to inform the public of the boundaries of what would constitute infringement of the claimed subject matter. Br. 31. This contention is also unpersuasive because it is unsupported, and further, provides no additional understanding as to the meaning of claims 18 and 20.

Regarding claim 20, Appellant further contends:

Given the construction of wellbore equipment of macroscopic dimensions, as is ordinary and customary, “substantially maintaining pressurization of the wellbore” and “not substantially [contributing] to maintenance of pressurization of

the wellbore” is dependent upon which relationship of which elements provides a seal to maintain pressurization. When the claim recites the “seal between the dart and the float equipment” as substantially maintaining pressurization and the top plug and bottom plug as not substantially contributing to maintenance of pressurization of the well bore,” a definite relationship of specific elements serving a specific purpose is recited, and the claim is definite.

Appeal Br. 33–34. This contention also does not explain what is meant by “substantially” in terms of objective boundaries, and thus, is unpersuasive.

Appellant’s Specification describes, “[i]n some applications, subsequent high pressures within the wellbore are *substantially maintained* by sealing engagement of the sealing dart and the float equipment” (*see* Spec. ¶ 28 (emphasis added)), and “[i]n some applications, the top and bottom plug do not *substantially contribute* to the maintenance of subsequent high pressures within the wellbore” (*see id.* ¶ 29 (emphasis added)). These descriptions closely match the language of claims 18 and 20, but fail to provide any further objective boundaries for the meaning of “substantially.”

As for the limitation “substantially maintain[ing] pressurization . . . between the dart and the float equipment” recited in claims 18 and 20, the Examiner states that the Specification provides no guidance how the pressurization is considered “substantial,” and that “the language implies that there may be other unclaimed elements involved in maintaining the pressurization in a possible situation where ‘substantial’ is interpreted as ‘less than all.’” Ans. 7–8. We agree that this claim language is unclear in claim 20 because the Specification provides no objective boundaries as to what degree of pressurization of the wellbore is required to be maintained

(or what degree of loss of pressurization of the wellbore is permitted) by the claimed seal.

The Examiner states that the limitation of “the top plug and bottom plug do not substantially contribute to maintenance of pressurization of the wellbore” recited in claim 20 “encompasses a range of where the top and bottom plug *contribute* to the maintenance of the pressurization of the wellbore to the situation described in Budde, where the top and bottom plugs *do not contribute at all* to maintaining the pressurization of the wellbore.” Ans. 8 (emphasis added). We agree that it is unclear whether the recited top and bottom plugs *do not contribute at all* to maintaining pressurization, or whether these plugs *do* contribute to maintaining pressurization, but their contribution is not “substantial.” For the latter possibility, it is further unclear what a “substantial” contribution requires. Accordingly, this limitation in claim 20 is subject to different plausible constructions, making it indefinite. *See Ex Parte Miyazaki*, 89 USPQ2d 1207, 1211 (BPAI 2008) (precedential) (“[I]f a claim is amenable to two or more plausible claim constructions, the USPTO is justified in requiring the applicant to more precisely define the metes and bounds of the claimed invention by holding the claim unpatentable under 35 U.S.C. § 112, second paragraph, as indefinite.”).

Absent the disclosure of any clear, objective boundaries in the Specification to guide interpretation of the term “substantially,” we determine that this term is unclear. *See Interval Licensing*, 766 F.3d at 1371. Appellant has not rebutted the Examiner’s finding that the Specification lacks guidance for this term by identifying disclosure of objective boundaries or criteria to interpret substantially. *See Mentor Graphics Corp.*

v. EVE-USA, Inc., 851 F.3d 1275, 1290 (Fed. Cir. 2017) (“This requires a patent to provide ‘some standard for measuring that [term of] degree.’”) (citations omitted). Thus, we sustain the rejection of claims 18 and 20 as being indefinite.

Claims 1, 5–14, 16, and 18–21 as unpatentable over Budde and Laurel

Claim 1

The Examiner finds that Budde discloses a wellbore sealing system comprising a bottom plug (first plug 40), a top plug (second plug 60), and a dart (sealing member 70) retained in the top plug and being deployable through a bore defined in the top plug and a bore defined in the bottom plug to sealingly engage float equipment (float assembly 20) abutting the bottom plug. Final Act. 5. The Examiner concedes that Budde does not describe explicitly that the dart is retained by a shear ring. *Id.* The Examiner notes, however, that “Budde discloses at [para. 33] that dart 70 is held in position by ‘shear mechanism’ 80, which are said to include shear pins, shear screws, or any other shearing device that may shear upon reaching a predetermined shear pressure.” *Id.* (emphasis omitted).

The Examiner finds that Laurel discloses a wellbore sealing system comprising a bottom plug (bottom plug 400), a top plug (top plug 300), and a dart (dart 200, inner sealing member 220), retained in the top plug with a shear ring (retaining ring 225). *Id.* (citing Laurel ¶ 47, Fig. 10). The Examiner concludes that it would have been obvious to one of ordinary skill in the art, in view of Laurel, to use a shear ring for the shear mechanism in Budde to obtain the predictable result of providing a more robust retaining

system, and to substitute one known type of shear mechanism for another to optimize the retention of the plugs. *Id.*

Appellant contends that Budde and Laurel do not teach or suggest “a dart retained in the top plug via a shear ring,” as claimed, but rather, paragraph 47 of Laurel teaches ““sealing member 220 . . . displaced out of the upper dart 200’ upon shearing of ‘the retaining ring 225.’” Br. 12. Appellant contends that shearing of retaining ring 225 in Laurel does not affect “the relationship of upper dart 200 to any other structural elements, such as top plug 300.” *Id.*

These contentions are unpersuasive. The Examiner’s rejection is premised on findings that Budde teaches a dart retained in a top plug, where the dart is “deployable through the bore defined in the top plug and the bore defined in the bottom plug to sealingly engage float equipment abutting the bottom plug,” as claimed. Final Act. 5. The Examiner explains that “the only element not explicitly disclosed by Budde is the retention of the dart by a shear ring.” Ans. 4. Although Budde does not appear to explicitly disclose a shear ring as the shear mechanism, Budde teaches broadly that the shear mechanism is not limited to shear pins or shear screws, but can be “*any other shearing device* that may shear upon reaching a predetermined shear pressure.” Budde ¶ 33 (emphasis added). Accordingly, the only requirement of the shear mechanism used in Budde according to this description is that it shears upon reaching a predetermined shear pressure. Consistent with this broad teaching of Budde, the Examiner proposes to utilize a retaining ring, as taught by Laurel, as a shear mechanism for retaining sealing member 70 in Budde. The Examiner explains that Laurel is “provided for its showing that it is known to use shearable rings as retention

mechanisms in wellbore cementing operations.” Ans. 4. The Examiner’s finding is supported by Laurel’s teaching of a retaining ring sheared by pressure in a plug system. Laurel ¶ 47. Appellant does not contend persuasively that Laurel’s retaining ring cannot be considered a shear ring, as claimed. In view of Budde’s broad teaching of the suitable shearing devices that can be used in its system, we are not apprised of error in the Examiner’s findings or reasoning for modifying Budde in view of Laurel to include a retaining ring as the shearing mechanism.

Appellant also contends that Budde discloses “second plug 60,” “first plug 40,” and “sealing member,” but “does not appear to mention any ‘dart.’” Br. 12. To the extent it is Appellant’s position that Budde’s sealing member cannot be considered a “dart,” as claimed, merely because Budde does not describe the sealing member with this same term, we disagree. To the contrary, it is well established that a reference is not required to use the identical terminology as in the claimed invention to constitute a disclosure. *In re Bond*, 910 F.2d 831, 832–33 (Fed. Cir. 1990).

Furthermore, Appellant does not explain persuasively why Budde’s sealing member cannot be considered a dart, as claimed, despite not being described with this term. In this regard, Appellant does not contend persuasively that a “dart” requires some structural feature that is lacking in Budde’s sealing member. And, we note the Examiner finds that Budde’s sealing member performs the same function as the claimed dart; namely, the sealing member “is deployable through the bore defined in the top plug and the bore defined in the bottom plug to sealingly engage float equipment abutting the bottom plug.” Ans. 3. Appellant does not apprise us of error in the Examiner’s finding that Budde’s sealing member performs this function.

For these additional reasons, Appellant does not apprise us of error in the Examiner's finding that Budde discloses a dart as claimed.

Appellant also contends Budde does not disclose "how 'any other shearing device' besides the stated 'shear pins' or 'shear screws' could be installed," as Budde "does not appear to contemplate any other feature of the top plug for retaining a shearing device aside from the radially oriented holes, which seem specifically suitable for retaining the stated 'shear pins' or 'shear screws.'" Br. 17.

This contention is unpersuasive. Even if Budde illustrates shear pins used as the shearing device, Budde's disclosure is not limited to only the specific embodiments shown in the drawings. To the contrary, a reference "may be used as evidence of obviousness under [35 U.S.C.] § 103 for all it fairly suggests to one of ordinary skill in the art." *In re Wiggins*, 488 F.2d 538, 543 (CCPA 1973). Here, Budde explicitly describes that the shearing device can be "any other shearing device [than shear pins or shear screws] that may shear upon reaching a predetermined shear pressure." Budde ¶ 33. We are unpersuaded Budde needs to additionally illustrate or describe such other types of shearing devices for Budde to be considered to disclose them.

Regarding Laurel, Appellant contends that "[r]etaining ring 225 appears to bear upon a bulbous nose of inner sealing member 220," which is contradicted by Budde's teachings of a conical section 88A, 88B. Br. 17. Appellant appears to be contending that if Laurel's shearing device were incorporated into Budde, Budde's structure "would inhibit concentration of a shear force at retaining ring 225" in the combination. *Id.*

This contention is unpersuasive. First, to the extent Appellant is contending that the structures of Budde and Laurel must be physically

combinable with each other in order to combine their teachings, “[i]t is well-established that a determination of obviousness based on teachings from multiple references does not require an actual, physical substitution of elements.” *In re Mouttet*, 686 F.3d 1322, 1332 (Fed. Cir. 2012); *In re Sneed*, 710 F.2d 1544, 1550 (Fed. Cir. 1983) (“[I]t is not necessary that the inventions of the references be physically combinable to render obvious the invention under review.” (Citation omitted)).

Second, Appellant’s argument fails to take into account the presumption that a skilled artisan is a person of ordinary creativity, not an automaton, and, as such, would have understood how to utilize different types of shearing devices in Budde. *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 421 (2007) (“A person of ordinary skill is also a person of ordinary creativity, not an automaton.”); *see also In re Sovish*, 769 F.2d 738, 743 (Fed. Cir. 1985) (holding that one of ordinary skill in the art is presumed to be skillful). We are unpersuaded by Appellant’s contention that one of ordinary skill in the art would lack the requisite level of skill to be able to combine the teachings of Budde and Laurel as proposed by the Examiner to result in the claimed wellbore sealing system.

Accordingly, because Appellant does not apprise us of error in either the Examiner’s findings or reasoning, we sustain the rejection of claim 1 as unpatentable over Budde and Laurel.

Claim 5

Claim 5 depends from claim 1 and recites, “further comprising a dart receptacle defined in the float equipment.” Br. 35 (Claims App.). The Examiner finds that Budde discloses this limitation. Final Act. 5.

Appellant disagrees, contending that Budde's sealing member 70A is configured to mate with receptacle 30 in float assembly 20. Br. 19.

Appellant contends that, in Laurel, upper dart 200 remains unchanged in position upon shearing of retaining ring 225, and so "it cannot be said that there is any teaching or suggestion of receptacle 30 in the float assembly 20 serving as a 'dart receptacle,' especially since . . . Budde . . . does not appear to even mention any sort of 'dart.'" *Id.*

This contention is unpersuasive. As discussed above, the Examiner's rejection incorporates, or substitutes, Laurel's retaining ring in Budde as the shear mechanism to retain sealing member 70A in second plug 60. Appellant does not explain persuasively why Budde's sealing member cannot be considered a "dart," and thus, does not explain persuasively why Budde's receptacle 30, which receives the sealing member, cannot be considered to correspond to the claimed dart receptacle. Appellant's contention does not address persuasively the proposed combination, and thus, fails to apprise us of error in the Examiner's findings or reasoning. We sustain the rejection of claim 5 as unpatentable over Budde and Laurel.

Claim 6

Claim 6 depends from claim 5 and recites, "the receptacle is defined within a float collar adjacent a float valve." Br. 35 (Claims App.). The Examiner finds Budde discloses that the receptacle is defined within a float collar (float assembly 20) adjacent a float valve (valves 32A, 32B). Final Act. 5.

Appellant contends that the applied combination fails to teach "a dart receptacle," as claimed. Br. 19. This contention is unpersuasive for the reasons discussed for claim 5. As Appellant does not apprise us of error in

the Examiner's findings or reasoning, we sustain the rejection of claim 6 as unpatentable over Budde and Laurel for the same reasons as claim 5.

Claim 7

Claim 7 depends from claim 5 and recites, "the receptacle is defined within at least one of a landing collar, float shoe, guide shoe, stage collar, and fracking collar." Br. 35 (Claims App.). The Examiner finds Budde discloses this limitation. Final Act. 6 (citing Budde ¶ 5).

Appellant's contention for claim 7 is again premised on the contention that the applied combination fails to teach a "dart receptacle," as recited in claim 5. Br. 19. As Appellant does not apprise us of error in the Examiner's findings or reasoning, we sustain the rejection of claim 7 as unpatentable over Budde and Laurel for the same reasons as claim 5.

Claim 8

Claim 8 depends from claim 1 and recites, "the dart further comprises a latch configured to engage a complementary feature of the float equipment." Br. 35 (Claims App.). The Examiner finds Budde's sealing member includes a lock ring 94A (Fig. 2A) or a lock ring 94B (Fig. 3C) that engages a groove 38 of receptacle 30 and satisfies this limitation of claim 8. Final Act. 6.

Appellant again contends unpersuasively that Budde fails to mention any "dart." Br. 20. Furthermore, Appellant does not explain persuasively why Budde's lock ring 94A or 94B cannot be considered a latch of a dart configured to engage a complimentary feature of float equipment, as claimed. Accordingly, because Appellant does not apprise us of error in the Examiner's findings or reasoning, we sustain the rejection of claim 8 as unpatentable over Budde and Laurel.

Claim 9

Claim 9 depends from claim 8 and recites, “the dart is configured with first and second sealing surfaces to engage a complementary feature of the float equipment to provide bi-directional sealing.” Br. 35 (Claims App.). The Examiner finds Budde discloses the claimed complimentary features; namely, shoulder 96B (of sealing member 70B) and recess (groove 38 of receptacle 30) as shown in Figures 3A and 3C. Final Act. 6.

Appellant contends that Budde teaches only that shoulder 96B engages a seat on receptacle 30 to prevent sealing member 70B from axial movement and does not teach that shoulder 96B and groove 38 provide the claimed bi-directional sealing. Br. 20 (citing Budde ¶ 39). The Examiner responds that Budde discloses seals 98B to prevent fluid communication through the bore of the float assembly, “which certainly appears to be ‘bi-directional’ sealing.” Ans. 4–5.

We note seals 98B are shown in Figure 3C of Budde, for example. As described in Budde, “the sealing member 70B includes one or more seals 98B, such as a-rings, that prevent fluid communication through the bore of the float assembly 20.” Budde ¶ 39 (boldface omitted). Appellant does not apprise us of error in the Examiner’s finding that seals 98B and groove 38 provide the claimed bi-directional sealing. Accordingly, because Appellant does not apprise us of error in the Examiner’s findings or reasoning, we sustain the rejection of claim 9 as unpatentable over Budde and Laurel.

Claim 10

Independent claim 10 recites a method of sealing a wellbore comprising, *inter alia*, “deploying a top plug *retaining via a shear ring* a deployable dart down the wellbore.” Br. 36 (Claims App.) (emphasis

added). The Examiner finds Budde discloses all limitations of claim 10 except for a shear ring, and, as discussed above for the rejection of claim 1, relies on Laurel as teaching this limitation. Final Act. 6–7.

Appellant contends that Budde and Laurel fail to teach or suggest “a dart retained in the top plug via a shear ring.” Br. 21. This contention is unpersuasive for the reasons discussed above for the rejection of claim 1. Accordingly, because Appellant does not apprise us of error in either the Examiner’s findings or reasoning, we sustain the rejection of claim 10 as unpatentable over Budde and Laurel.

Claim 11

Claim 11 depends from claim 10 and recites, “deploying the dart comprises pressurizing the wellbore to overcome a shear device positioned between the top plug and the dart.” Br. 36 (Claims App.). The Examiner finds Budde teaches a shear device (shearing mechanism). Final Act. 5 (citing Budde ¶ 29).

Appellant contends that because Laurel’s upper dart 200 remains unchanged in position upon shearing of retaining ring 225, the applied combination does not teach or suggest “deploying the dart comprises pressurizing the wellbore to overcome a shear device 80 positioned between the top plug and the dart,” especially because Budde does not appear to even mention any “dart.” Br. 22.

These contentions are unpersuasive for reasons discussed for the rejection of claim 1. The Examiner relies on Laurel only for teaching a shear ring, and Appellant’s contention that Budde does not teach a dart is unpersuasive. Accordingly, because Appellant does not apprise us of error

in either the Examiner's findings or reasoning, we sustain the rejection of claim 11 as unpatentable over Budde and Laurel.

Claim 12

Claim 12 depends from claim 10 and recites, "further comprising receiving the dart within a receptacle defined in the float equipment." Br. 36 (Claims App.). The Examiner finds Budde discloses a receptacle 30 received in float assembly 20. Final Act. 7.

Appellant again contends that because Laurel's upper dart 200 remains unchanged in position upon shearing of retaining ring 225, the applied combination does not teach or suggest that receptacle 30 in float assembly 20 "receiv[es] the dart within a receptacle 30 defined in the float equipment," especially because Budde does not appear to even mention any "dart." Br. 22.

These contentions are unpersuasive for reasons discussed above for the rejections of claims 1 and 11. Accordingly, because Appellant does not apprise us of error in either the Examiner's findings or reasoning, we sustain the rejection of claim 12 as unpatentable over Budde and Laurel.

Claim 13

Claim 13 depends from claim 12 and recites, "the receptacle is defined within a float collar adjacent a float valve." Br. 36 (Claims App.). The Examiner finds Budde discloses float collar 20 adjacent valves 32A, 32B. Final Act. 7.

Appellant contends that the applied combination fails to disclose or suggest the recited limitation because the combination does not teach "receiving the dart within a receptacle defined in the float equipment," as recited in claim 12. As Appellant's contentions for claim 12 are

unpersuasive, we sustain the rejection of claim 13 as unpatentable over Budde and Laurel for the same reasons.

Claim 14

Claim 14 depends from claim 12 and recites, “receiving the dart comprises latching the dart within the receptacle defined in the float equipment.” Br. 36 (Claims App.). The Examiner finds Budde discloses this limitation. Final Act. 7.

For claim 14, Appellant again contends that Budde does not mention a “dart,” and that Laurel distinguishes inner seal member 220 from upper dart 200 after retaining ring 225 has been sheared. Br. 23.

These contentions are unpersuasive for reasons discussed above for claims 10 and 12. Accordingly, because Appellant does not apprise us of error in either the Examiner’s findings or reasoning, we sustain the rejection of claim 14 as unpatentable over Budde and Laurel for the same reasons.

Claim 16

Claim 16 depends from claim 10 and recites, “further comprising forming an axial seal *between the dart and the bottom plug.*” Br. 36 (Claims App.) (emphasis added). The Examiner finds Budde discloses this limitation. Final Act. 7.

Appellant contends, *inter alia*, that Budde discloses that sealing member 70A mates with receptacle 30 *in float assembly 20*. Br. 23 (citing Budde ¶¶ 32, 34).

We agree with Appellant that the Examiner does not show by a preponderance of the evidence that Budde forms an axial seal between sealing member 70A and first plug 40 (the “bottom plug”). Paragraph 29 of Budde teaches that sealing member 70 travels through first plug 40 and into

float assembly 20, where sealing member 70 seals float assembly 20. And, as Appellant notes, paragraphs 32 and 34 of Budde disclose that sealing member 70A mates with or engages receptacle 30. Accordingly, we do not sustain the rejection of claim 16 as unpatentable over Budde and Laurel.

Claim 18

Claim 18 depends from claim 10 and recites, “further comprising substantially maintaining pressurization of the wellbore by a seal *between the dart and the float equipment.*” Br. 36 (Claims App.) (emphasis added). The Examiner finds Budde discloses this limitation. Final Act. 7 (citing Budde ¶ 29).

Appellant contends that because Laurel’s upper dart 200 remains unchanged in position upon shearing of retaining ring 225, the applied combination does not teach or suggest the limitation of claim 18, especially because Budde does not mention a “dart,” as claimed. Br. 24.

This contention is unpersuasive. Appellant does not show persuasively that Budde fails to disclose a dart, as claimed, and the Examiner relies on Budde, not Laurel, for teaching a dart that forms an axial seal between it and float equipment. Accordingly, because Appellant does not apprise us of error in either the Examiner’s findings or reasoning, we sustain the rejection of claim 18 as unpatentable over Budde and Laurel.

Claim 19

Claim 19 depends from claim 18 and recites, “pressurization of the wellbore is at least partially maintained by a seal between the dart and the bottom plug.” Br. 37 (Claims App.). The Examiner finds Budde discloses this limitation. Final Act. 7 (citing Budde ¶ 29).

Appellant contends that Budde teaches that sealing member 70 travels through second plug 60 and first plug 40 and into receptacle 30 in float assembly, and sealing member 70 seals float assembly 20. Br. 24–25 (citing Budde ¶ 29). Accordingly, Appellant contends, Budde’s teaching of sealing member 70 sealing float assembly 20 does not teach that “pressurization of the wellbore is at least partially maintained by a seal *between the dart and the bottom plug*,” as recited in claim 19. *Id.* at 25 (emphasis added).

We agree with Appellant that the Examiner does not establish by a preponderance of the evidence that Budde forms a seal between sealing member 70A and first plug 40 (the “bottom plug”). Paragraph 29 of Budde teaches that sealing member 70 mates with or engages receptacle 30. Accordingly, we do not sustain the rejection of claim 19 as unpatentable over Budde and Laurel.

Claim 20

Claim 20 depends from claim 10 and recites, “further comprising substantially maintaining pressurization of the wellbore by a seal *between the dart and the float equipment* wherein the top plug and bottom plug do not substantially contribute to maintenance of pressurization of the wellbore.” Br. 37 (Claims App.) (emphasis added). The Examiner finds Budde discloses these claimed features. Final Act. 7 (citing Budde ¶ 29).

Appellant again contends that because Laurel’s upper dart 200 remains unchanged in position upon shearing of retaining ring 225, the applied combination does not teach or suggest the limitation of claim 20, especially because Budde does not mention a “dart,” as claimed. Br. 25.

This contention is again unpersuasive for reasons discussed above. Appellant does not show persuasively that Budde fails to disclose a dart, and

the contention does not address persuasively the Examiner's rejection. Accordingly, because Appellant does not apprise us of error in either the Examiner's findings or reasoning, we sustain the rejection of claim 20 as unpatentable over Budde and Laurel.

Claim 21

Claim 21 depends from claim 9 and recites, "at least one of the sealing surfaces is *a cammed surface* that engages a complementary feature of the float equipment to provide bi-directional sealing." Br. 37 (Claims App.) (emphasis added). The Examiner finds Budde teaches that sealing member 70A may include a tapered section at a lower end of the first bore or second bore. Final Act. 8. As understood, the Examiner finds that the tapered section of Budde meets the limitation of "a cammed surface that engages a complementary feature of the float equipment" because Appellant's Specification "uses taper and cam interchangeably. *Id.*

Appellant contends that the Specification describes the terms "tapered" and "cammed" alternatively, not interchangeably. Br. 26. The Examiner responds that the Specification does not explain how operation of latch 36 "would be different by using a 'cammed' surface[] instead of a 'tapered' surface." Ans. 6. According to the Examiner, claim 21 only requires "'a cammed surface that engages a complementary feature of the float equipment,'" and Budde's tapered section disclosed in paragraph 31 "obviously meets this limitation." *Id.*

First, we agree with Appellant that the Specification does not disclose that the terms "tapered" and "cammed" are interchangeable. Accordingly, we agree with Appellant that claim 21 requires a "cammed surface," as recited. Second, the Examiner does not establish by a preponderance of the

evidence that Budde's disclosed "tapered section" is, in fact, a "cammed surface." Third, as discussed above for claim 9, the Examiner finds that, in Budde, seals 98B and groove 38 provide the claimed bi-directional sealing. *See* Ans. 4–5. Claim 21 requires that at least one of the sealing surfaces recited in claim 9 is a cammed surface. The Examiner does not find, however, that one of the sealing surfaces in Budde relied on in rejecting claim 9 is a camming surface as recited in claim 21. Fourth, we agree with Appellant that, regardless, the Examiner does not show by a preponderance of the evidence that the tapered section disclosed in Budde meets the limitation of the cammed surface, as recited in claim 21. Accordingly, we do not sustain the rejection of claim 21 as unpatentable over Budde and Laurel.

Claims 15 and 22 as unpatentable over Budde, Laurel, and Coone

Claim 15 depends from claim 14 and recites, "latching the dart comprises compressing circumferential latch segments to pass a restriction defined in the receptacle and expanding the circumferential latch segments to engage a feature of the receptacle." Br. 36 (Claims App.). The Examiner relies on Coone for teaching the features of claim 15. Final Act. 8. The Examiner explains that Coone provides "disclosure that it is known to provide latch segments that can be compressed to pass a restriction and then expand to engage a complementary feature (threads) on a receptacle, as shown in figures 3 and 4." Ans. 7. The Examiner concludes that it would have been obvious to modify the latch of Budde to include circumferential latch segments as taught by Coone "to obtain the predictable result of more securely locking the plug to the float collar." Final Act. 8.

Appellant contends that the Examiner's stated motivation of "locking the plug to the float collar" does not correspond to the recited limitations of claim 15. Br. 27.

Appellant's contention is unpersuasive. As discussed above, Appellant does not argue persuasively that Budde fails to disclose the recited dart. Furthermore, Appellant does not show that the Examiner's proposed combination would lack any limitation recited in claim 15. Accordingly, because Appellant does not apprise us of error in either the Examiner's findings or reasoning, we sustain the rejection of claim 15 as unpatentable over Budde, Laurel, and Coone.

Claim 22 depends from claim 15 and recites, "the circumferential latch segments consist of cammed surfaces to engage a complementary feature of the receptacle." Br. 37 (Claims App.). The Examiner finds Coone discloses tapered surfaces (threads 26), which "obviously" meet the limitation of claim 22. Ans. 7.

We agree with Appellant that claim 22 requires "cammed surfaces." Br. 27. Accordingly, we agree with Appellant that the Examiner does not show by a preponderance of the evidence that Coone discloses the recited "cammed surfaces." Thus, we do not sustain the rejection of claim 22 as unpatentable over Budde, Laurel, and Coone.

Claims 17 and 23 as unpatentable over Budde, Laurel, and Giroux

Appellant essentially relies on the dependency of claims 17 and 23 from parent claim 10 for patentability. Br. 28–29. As we find no error in the Examiner's rejection of claim 10, we sustain the rejection of claims 17 and 23 as unpatentable over Budde, Laurel, and Giroux.

DECISION SUMMARY

In summary:

Claim(s) Rejected	35 U.S.C. §	Reference(s)/ Basis	Affirmed	Reversed
18, 20	112(b)		18, 20	
1, 5–14, 16, 18–21	103	Budde, Laurel	1, 5–14, 18, 20	16, 19, 21
15, 22	103	Budde, Laurel, Coone	15	22
17, 23	103	Budde, Laurel, Giroux	17, 23	
Overall Outcome			1, 5–15, 17, 18, 20, 23	16, 19, 21, 22

RESPONSE

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

AFFIRMED IN PART