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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte BRENDON G. NUNES and
FLORENTIN CHRISTOPH VON FRANKENBERG

Appeal 2021-001629
Application 15/530,528
Technology Center 3600

Before BENJAMIN D. M. WOOD, BRETT C. MARTIN, and
MICHELLE R. OSINSKI, *Administrative Patent Judges*.

OSINSKI, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

Appellant¹ appeals under 35 U.S.C. § 134(a) from the Examiner's decision rejecting claims 1, 5, 6, 8–10, 13, 15–18, and 20–24.² We have jurisdiction over the appeal under 35 U.S.C. § 6(b).

We AFFIRM IN PART.

¹ We use the term “Appellant” to refer to “applicant” as defined in 37 C.F.R. § 1.42. Appellant identifies the inventors Brendon G. Nunes and Florentin Christoph von Frankenberg as the real parties in interest. Appeal Br. 1.

² Claims 2–4, 7, 11, 12, 14, and 19 are cancelled. Amdt. (dated Aug. 27, 2019) at 7–9.

THE CLAIMED SUBJECT MATTER

Claims 1, 13, and 17 are independent. Claims 1 and 13 are reproduced below.

1. An airship comprising:
 - a frame;
 - a plurality of rotors driven by a plurality of electric motors for providing both lift and horizontal movement of said airship frame;
 - at least one battery operatively connected to said electric motors to provide electricity for powering said electric motors; an electronic controller for controlling said electric motors; and
 - a flight time-extending device distinct from said battery, rotors and electric motors, said flight time-extending device including a central volume of lighter-than-air gas; and
 - wherein said frame comprises exterior circumferential bands for mounting said rotors to said central volume.

13. A multicopter comprising:
 - a frame;
 - a plurality of rotors driven by a plurality of electric motors for providing both lift and horizontal movement of said airship frame;
 - at least one battery operatively connected to said electric motors to provide electricity for powering said electric motors;
 - an electronic controller for controlling said electric motors;
 - at least one generator for recharging said at least one battery; and
 - an internal combustion engine with a power to weight ratio of at least about 1.5: 1, expressed in kW and pounds, for powering said at least one generator.

Appeal Br. 13–14 (Claims App.).

REFERENCES

The prior art relied upon by the Examiner is:

Name	Reference	Date
Porter	US 7,913,948 B2	Mar. 29, 2011
Goelet	US 8,894,002 B2	Nov. 25, 2014

THE REJECTIONS³

- I. Claims 5 and 20 stand rejected under 35 U.S.C. § 112(b) as being indefinite based upon certain language described herein. Final Act. 2.
- II. Claims 1, 5, 17, 18, and 20 stand rejected under 35 U.S.C. § 103 as unpatentable over Goulet and Porter. *Id.* at 3–5.
- III. Claims 6, 8–10, 13, 15, 16, and 21–24 stand rejected under 35 U.S.C. § 103 as unpatentable over Goelet, Porter, and Appellant’s Admitted Prior Art (“AAPA”). *Id.* at 6–8.⁴

OPINION

Rejection I

Claims 5 and 20 recite an airship

further comprising a plurality of shrouded laterally oriented thrusters some of which allow the airship to rapidly compensate for gusts of wind and maintain a very precise position or trajectory and some of which are mounted so that they can be used to force a descent rather than maintain altitude.

Appeal Br. 13, 14 (Claims App.).

³ The Examiner withdrew a rejection of claims 5 and 20 under 35 U.S.C. § 112(b) as being indefinite under an alternative basis. Final Act. 3; Ans. 9.

⁴ The Examiner refers to paragraph 46 of Appellant’s published patent application, corresponding to page 8, lines 3–7 of Appellant’s Specification, as AAPA. Final Act. 6, 7.

The Examiner first takes the position that the terms “some,” “rapidly,” and “precise” are unclear. Final Act. 2. The Examiner elaborates that the Specification fails to give a range or define these terms. Ans. 9. Appellant argues that these terms “are merely relative terms, or terms of degree, and when viewed by one of ordinary skill in the art with respect to page 5, line 29 – page 6, line 25 of the [S]pecification and Figure 2 of the original drawings are clearly definite.” Appeal Br. 4 (citing *One-E-Way, Inc. v. Int’l Trade Comm’n*, 859 F.3d 1059, 1062, 1063 (Fed. Cir. 2017) and *Nautilus, Inc. v. Biosig Instr., Inc.*, 134 S. Ct. 2120, 2129 (2014)). Appellant continues that the claims are merely broad, but “even undue breadth is not indefiniteness.” Reply Br. 1 (citing *In re Johnson*, 558 F.2d 1008, 1016 n.17 (CCPA 1977)). For example, with respect to the term “some,” Appellant argues that “[i]t doesn’t make any difference whether one, two, three, or whatever number of the thrusters are in the group of ‘some,’” and “[t]he ‘some’ language is broad, but that does not make it indefinite.” *Id.* at 2. Appellant adds that “[t]he same goes for the rest of the objected-to terms in claims 5 [and] 20.” *Id.*

Words of degree may lack precision, but they do not in themselves render a claim indefinite. *Seattle Box Co. v. Industrial Crate & Packing, Inc.*, 731 F.2d 818, 826 (Fed. Cir. 1984). Rather, a term of degree is definite if the specification “provides some standard for measuring that degree,” wherein “one of ordinary skill in the art would understand what is claimed when the claim is read in light of the specification.” *Id.* Here, at least the claim terms “rapidly” and “precise” are terms of degree. Although the Specification discloses that an advantage of the invention is “that it does not need to pitch or roll the entire craft in order to move horizontally” and

“[t]his ability to quickly generate lateral thrusts allows the drone 110 to rapidly compensate for gusts of wind and potentially maintain a very precise position or trajectory, otherwise difficult to achieve with traditional multirotor designs” (Spec. 5:29–6:3), we are not persuaded by Appellant’s argument that the Specification provides a standard for measuring a degree of “rapidly” compensating for gusts of wind or maintaining a very “precise” position or trajectory. That is, in contrast to Appellant’s cited case law, we are not persuaded that the terms “rapidly” and “precise” would inform a person of ordinary skill in the art about the scope of the invention with reasonable certainty even when viewed in light of the specification and considering the skill in the art. As to the term “some,” we agree with the Examiner that a person of ordinary skill in the art would not understand the minimum number of thrusters for the recited functionality that would constitute “some” of the thrusters. The term “some” is an indefinite or unspecified number, and so “some” does not identify the minimum number of thrusters contemplated in the claims.

For the foregoing reasons, we affirm the Examiner’s rejection of claims 5 and 20 under 35 U.S.C. § 112(b) on this first basis.

The Examiner also takes the position that Appellant “has not defined how the system compensates for wind gusts.” Final Act. 2. The Examiner acknowledges the Appellant’s Specification discloses “that the system compensates for gust[s,] but there is no detail as to how this is done.” *Id.* The Examiner questions the functionality because “[t]here are not sensors defined or control algorithms that allow the system to compensate for wind gusts.” *Id.* Appellant responds that “[t]he paragraph bridging pages 5 [and] 6 of the [S]pecification states that the balloon 12 in combination with the

lateral thrusts of some of the shrouded propellers 22 automatically compensates for wind gusts.” Appeal Br. 4. Appellant adds that “[t]here is no need for sensors.” *Id.* In our view, the Examiner’s concerns relate more to whether Appellant has made an enabling disclosure of the described functionality, as opposed to whether the recited functionality is indefinite. The claim is clear as to the structure required by the claim (e.g., a plurality of shrouded laterally oriented thrusters) and the functionality required by the claim (e.g., compensate for gusts of wind and force a descent).

For the foregoing reasons, we do not affirm the Examiner’s rejection of claims 5 and 20 under 35 U.S.C. § 112(b) on this second basis.

Rejection II

Claims 1 and 17

The Examiner relies on Goelet for many of the limitations of independent claims 1 and 17, including:

frame (20); a plurality of rotors (532, 541, and 542) driven by a plurality of electric motors (410) for providing both lift and horizontal movement of the airship frame; at least one battery (1030) operatively connected to the electric motors to provide electricity for powering the electric motors; and electronic controller for controlling the electric motors; and a flight time extending device . . . [dis]tinct from the battery, rotors, and electric motors, said flight time-extending device including a central volume of lighter-than-air gas.

Final Act. 3–4. The Examiner acknowledges that although Goelet teaches a frame, “it is silent about [it] being an exterior frame.” *Id.* at 4.

The Examiner finds that “[F]igure 3 of Porter . . . teaches that it is well[-]known to have an exterior frame (42) in which rotors (104 and 106) are mounted.” *Id.* The Examiner concludes that it would have been obvious to modify Goelet so as to have an exterior frame as taught by Porter “in

order to allow for a more accessible truss for easier movement of the rotors or maintenance work.” *Id.*; *see also id.* at 4–5 (making similar findings and conclusion in connection with independent claim 17). The Examiner elaborates in the Answer that there are tradeoffs to internal and external frames, with “the internal frame creat[ing] a more aerodynamic airship so there is less drag,” but “working on, construction, and maintenance on the propulsion systems which are mounted to the frame is easier when the frame is external and can easily be accessed.” Ans. 11. The Examiner also makes findings that Goelet’s “truss has three bands which are connected by other structural members[,] and [F]igure 3 of Porter teaches a truss comprising 3 outer bands that are connected by other structures.” *Id.* at 11–12.

Appellant argues that Goelet requires an internal frame, and there is no suggestion therein that an external frame could be provided. Appeal Br. 5 (citing Goelet 6:10–25). Appellant similarly argues that “Porter provides no reason why one of ordinary skill in the art would go against the teachings of Goelet and instead provide an external frame.” *Id.* To the extent Appellant is suggesting that Goelet or Porter teaches away from an external frame, we do not find such an argument persuasive because Appellant has not identified any passage in Goelet or Porter that actually criticizes, discredits, or discourages the use of an external frame. *See In re Fulton*, 391 F.3d 1195, 1201 (Fed. Cir. 2004) (In order to “teach away,” a reference must “criticize, discredit, or otherwise discourage the solution claimed.”). Although we acknowledge that Goelet teaches an internal frame in the portions of the Specification identified by Appellant, we note that “[a] reference does not teach away. . . if it merely expresses a general preference for an alternative invention but does not ‘criticize, discredit, or otherwise

discourage' investigation into the invention claimed.” *DePuy Spine, Inc. v. Medtronic Sofamor Danek, Inc.*, 567 F.3d 1314, 1327 (Fed. Cir. 2009) (quoting *Fulton*, 391 F.3d at 1201).

To the extent that Appellant appears to insist on an explicit teaching, suggestion, or motivation in Goelet or Porter for the Examiner’s proposed modification, such an argument has been foreclosed by the Supreme Court. *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 415, 419 (2007) (stating that a rigid insistence on teaching, suggestion, or motivation is incompatible with its precedent concerning obviousness). Rather, the Court requires that we look to whether the Examiner has provided “some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.” *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006) (cited with approval in *KSR*, 550 U.S. at 418). Here, the Examiner has provided such reasoning (Final Act. 4–5; Ans. 11), and Appellant has not responded with any particularity to such reasoning.

Appellant also argues that an external frame would “likely be inconsistent with the provision of the solar cells 1010 on the top of the airship, which are required.” Appeal Br. 5 (citing Goelet 1:19–21). We are not persuaded that an external frame would preclude the use of solar cells. For example, the only external frame identified in Porter is a circumferentially extending frame that leaves the top of the airship free. Porter Fig. 3. One of ordinary skill in the art would understand that modification of Goelet to include an exterior frame as taught by Porter would leave the top of the airship available for the provision of solar cells.

Appellant additionally argues that “[t]he use of the internal frame members 22 requires the viscous sealant material 18 to cooperate with the

hull 14 airtight layer 16 (col. 7, Figures 4A, B), whereas those components are eliminated by use of the exterior circumferential bands recited in claims 1 and 17 without elimination of the ultimate function.” Appeal Br. 5.

Appellant rephrases that “[t]he use of the external frame of the claimed invention eliminates the need for the required sealant 18 of Goelet” and “[t]he elimination of prior art structure without elimination of its function is a classic indication of unobviousness.” *Id.* at 6 (citing *Uarco Inc. v. Moore Business Forms, Inc.*, 440 F.2d 580 (7th Cir. 1971) and *In re Edge*, 359 F.2d 896, 899 (CCPA 1966)).

Goelet teaches “in some embodiments, hull 12 may be formed of a self-sealing material. . . . In such an embodiment, hull material 14 may include a flexible, air-tight layer 16 and a viscous substance 18 adjacent air-tight layer 16.” Goelet 7:10–19 (cited at Ans. 11). The Examiner asserts that “[a]s can be seen[,] the sealant is used in some embodiments,” and also asserts that “[t]he sealant material can be used on airships that have both internal and external frames” and could be used to “help close a puncture of an airship that has an external frame.” Ans. 11. Appellant’s reliance on the cited caselaw is misplaced in that the Examiner’s combination of Goelet and Porter does not retain the functionality of the self-sealing material and at the same time eliminate the self-sealing material. The Examiner’s combination appears to be based on retaining the self-sealing material with the use of an external frame. Alternatively, if the Examiner’s combination eliminated the self-sealing material, the Examiner is making no suggestion that the functionality of self-sealing would somehow be retained without such material. The cited case law is simply inapplicable to the instant case.

Appellant next argues that Porter’s truss “comprises a single complicated ‘truss’[□] structure surrounding the horizontal center of the reflector balloon . . . in sharp contrast to the simple circumferential bands (plural) . . . recited in claims 1 [and] 17.” Appeal Br. 5–6 (underlining omitted). The Examiner responds that “[F]igure 3 of Porter teaches a truss comprising 3 outer bands that are connected by other structures.” Ans. 11–12. Appellant replies that “Figure 3 of Porter . . . does not show circumferential bands” and the only place the term “band” is used in Porter is in connection with microwave band frequency. Reply Br. 4. Even if Porter does not label its truss structure as comprising “bands,” a reference need not describe a limitation *in haec verba*. See *In re Bode*, 550 F.2d 656, 660 (CCPA 1977). Appellant further argues that Porter’s truss 42 “is based on the geometric rigidity of a triangle” and “[t]here are no bands.” Reply Br. 5. An ordinary and customary meaning of the word “band” extends to “[a] hoop . . . for putting round anything,” and an ordinary and customary meaning of the word “hoop” extends to “[a] circular band or ring of metal, wood, or other stiff material.” Online Oxford English Dictionary (Appendices A and B). The Examiner’s finding that Porter’s truss structure comprises exterior circumferential bands for mounting rotors to the central volume appears to be reasonable given the breadth of the ordinary and customary meaning of the term “band” and is supported by a preponderance of the evidence. Porter Fig. 3. Appellant does not apprise us of error in the Examiner’s findings by providing an argument as to a particular requirement for a “band” based in the language of the claims and/or in Appellant’s Specification that would preclude the circumferentially extending portions

of Porter's truss structure, even if put into a triangular configuration, from being considered to comprise circumferential bands.

For the foregoing reasons, we are not apprised of error by the Examiner in determining that the combination of Goelet and Porter renders obvious the subject matter of claims 1 and 17. Accordingly, we sustain the rejection of these claims under 35 U.S.C. § 103 as unpatentable over these references.

Claims 5 and 20

Claims 5 and 20 recite an airship

further comprising a plurality of shrouded laterally oriented thrusters some of which allow the airship to rapidly compensate for gusts of wind and maintain a very precise position or trajectory and some of which are mounted so that they can be used to force a descent rather than maintain altitude.

Appeal Br. 13, 14 (Claims App.). The Examiner points to Goelet's explicit teachings that:

FIGS. 11A and 11B illustrate exemplary configurations (viewed from the bottom of airship 10) of a propulsion system associated with airship 10 consistent with the present disclosure. Propulsion assemblies 31 associated with airship 10 may be configured to provide a propulsive force (e.g., thrust), directed in a particular direction (i.e., a thrust vector), and configured to generate motion (e.g., horizontal motion), *counteract a motive force* (e.g., *wind forces*), and/or other manipulation of airship 10 (e.g., yaw control). For example, propulsion assemblies 31 may enable yaw, pitch, and roll control as well as providing *thrust for horizontal and vertical motion*. Such functionality may depend on placement and power associated with propulsion assemblies 31.

Goelet 9:16–28 (emphasis added), Figs. 11A–11B (cited at Ans. 10). The Examiner then takes the position that “Goelet clearly discloses that it is known to compensate for gust[s] of wind and maintain position or trajectory

and that they can be used to force a descent rather than maintain altitude.”

Ans. 10. As to the requirement of claims 5 and 20 that the laterally oriented thrusters be shrouded, the Examiner takes the position that “it is well known to use both shrouded and unshrouded propeller assemblies on an airship.” *Id.* (citing Piasecki 6:22–26)⁵.

Appellant argues that although the identified portion of Goelet refers to structure 31, “there are NO structures 31 anywhere in th[e] Figures.” Reply Br. 3. Appellant’s argument does not address with sufficient particularity that the identified portion of Goelet specifically states that it refers to “exemplary configurations . . . of a propulsion system associated with airship 10 consistent with the present disclosure” and that it is “desirable to utilize propulsion assemblies 31 for controlling or assisting in control of yaw, pitch, and roll associated with airship 10,” and then goes on to reference propulsion assemblies 532, 533, 534 that do appear in Figure 11B. Goelet 9:16–28; 9:44–10:26. In addition, reference numeral 31 is clearly shown in Figure 12A, also identified by the Examiner. Goelet Fig. 12A. Appellant also argues that “[t]here is no disclosure anywhere within Goelet of how his port propulsion assemblies could possibly be constructed to accomplish what Goelet wants to accomplish.” Reply Br. 3. The Examiner has adequately supported that the teachings of Goelet render obvious the thrusters having the claimed functionality due to the explicit statement regarding such functionality in the identified portion of Goelet.

Appellant also argues that “[n]owhere does Goelet disclose shrouded thrusters.” Appeal Br. 6. Appellant adds that even if shrouds are known in

⁵ US 4,995,572, issued Feb. 26, 1991 (hereinafter “Piasecki”).

the art, that does not render the use of shrouds obvious. *Id.* Appellant states that “[s]hrouds enhance the ability of the invention to compensate for wind gusts; and there is no reason to provide shrouds in Figures 11 A [and] B of Goelet since Goelet nowhere recognizes that need and therefore shrouds are not obvious.” *Id.* Significantly, the Examiner’s modification to Goelet to include shrouds is not for the purpose of “enhanc[ing] the ability of the invention to compensate for wind gusts,” since Goelet explicitly already has such functionality. *Id.* Rather, the Examiner’s modification is simply based on the art’s recognition of both kinds of shrouds being suitable for propeller assemblies on an airship. Ans. 10 (citing Piasecki 6:22–26). Appellant does not provide persuasive reasoning or evidence that shrouded thrusters could not have been substituted for unshrouded thrusters in modified Goelet to achieve the same functionality of enabling propulsion.

For the foregoing reasons, we are not apprised of error by the Examiner in determining that the combination of Goelet and Porter renders obvious the subject matter of claims 5 and 20. Accordingly, we sustain the rejection of these claims under 35 U.S.C. § 103 as unpatentable over these references.

Claim 18

Claim 18 recites “said central volume is ellipsoid in shape.” Appeal Br. 14 (Claims App.). The Examiner finds that Goelet discloses “that the central volume is ellipsoid in shape.” Final Act. 5 (citing Goelet Figs. 1, 2, 10, 11B, 12A). Appellant argues that “[c]laim 18 calls for the ellipsoid central volume in combination with the external circumferential bands recited in claim 17, from which it depends.” Appeal Br. 7. Appellant continues that “[t]he external circumferential bands of claims 17 [and] 18

help to inherently define the ellipsoid shape whereas the internal frame of Goelet requires the system of Fig. 4B etc. to maintain the ellipsoid shape.” *Id.* The Examiner responds that both Goulet and Porter teach circumferential bands and have an ellipsoid shape. Ans. 12. The Examiner has supported by a preponderance of the evidence an airship having a central volume that is ellipsoid in shape and also meeting the limitations of the claim from which it depends. To the extent that Goelet requires the system of Figure 4B to maintain the ellipsoid shape as urged by Appellant (Appeal Br. 7), the Examiner has explained that such a system “can be used on airships that have both internal and external frames.” Ans. 11.

For the foregoing reasons, we are not apprised of error by the Examiner in determining that the combination of Goelet and Porter renders obvious the subject matter of claim 18. Accordingly, we sustain the rejection of this claim under 35 U.S.C. § 103 as unpatentable over these references.

Rejection III

Claims 6, 8, 9, 13, 15, 16, and 21–24

The claims of this rejection generally require a generator for recharging the battery and an internal combustion engine for powering the generator, the power to weight ratio of the internal combustion engine being a specific amount expressed in kW and pounds. Appeal Br. 13–15 (Claims App.). The Examiner finds that Goelet teaches “a generator in the form of solar panels to recharge batteries (1030) to power the electric motors, [but] it is silent about using a gas turbine engine with a specific power to weight ratio to recharge the batteries.” Final Act. 6. The Examiner further finds that AAPA teaches “that it is well known . . . to use a gas turbine engine

with a power to weight ratio [of] at least 1.8:1.” *Id.* The Examiner concludes that it would have been obvious “to modify Goelet . . . with an efficient gas turbine engine as taught by AAPA in order to provide more power than the weight of the system which is desired and well known in the art.” *Id.*

Appellant argues that the AAPA identified by the Examiner merely states that:

[o]ne particularly desirable gas turbine engine 32 is a commercially available Jet Central Turbines engine which is a single stage centrifugal flow gas turbine engine configured to operate as a turbojet engine. It has a kerosene start, an intelligent control system, a fuel pump, electronic starting gas vale, and electronic fuel vale, weighs only about five pounds and produces about 9 kW of power so that its power to weight ratio (expressed in kW and pounds) is about 1.8:1.

Spec. 8:3–7 (cited at Appeal Br. 7–8). Appellant explains that “[a]ll that this section of [the S]pecification does is to demonstrate enablement.” Appeal Br. 8. Appellant adds that “the mere existence of an enabling engine *per se* in the prior art does NOT make the use thereof obvious.” *Id.*

We agree with Appellant that the identified AAPA merely provides an exemplary gas turbine engine and supports enablement by Appellant, rather than supporting that it is “well[-]known to use a gas turbine engine” with a particular power to weight ratio. Final Act. 6. Moreover, even if AAPA were considered to teach that it is well-known to use a specific gas turbine engine with a power to weight ratio of at least 1.8:1, this fails to remedy the Examiner’s deficiency in the articulation of the rejection as to how the AAPA and/or Goelet teaches the use of a gas turbine engine powering a generator at all. That is, the Examiner’s rejection fails to explain how the prior art, even taking into account the purported teaching of AAPA, results

in an airship including an internal combustion engine powering a generator. The Examiner asserts in the Answer that Appellant “teaches that it is well known that an efficient engine could be used to provide power.” Ans. 12. The claims are directed to an airship having an internal combustion engine to power a generator. Again, the mere fact that it is known that an engine can provide power does not explain how the prior art renders obvious an airship comprising an internal combustion engine to power a generator.

For the foregoing reasons, we are apprised of error by the Examiner in determining that the combination of Goelet, Porter, and AAPA renders obvious the subject matter of claims 6, 8, 9, 13, 15, 16, and 21–24. Accordingly, we do not sustain the rejection of these claims under 35 U.S.C. § 103 as unpatentable over these references.

Claim 10

Claim 10 depends from claim 1, and recites that the airship “compris[es] an unmanned quadcopter.” Appeal Br. 13 (Claims App.). The Examiner finds that AAPA “teaches that it is well known in the art to use a plurality of electronically controlled rotors on an unmanned quadcopter” and concludes that it would have been obvious “to modify Goelet . . . with the system on an unmanned quadcopter in order to provide electric rotors on a well-known type of unmanned airship.” Final Act. 6. Appellant does not argue with sufficient particularity to apprise us of error by the Examiner in connection with claim 10 in particular. *See* Appeal Br. 7–12; Reply Br. 5–6.

For the foregoing reasons, we are not apprised of error by the Examiner in determining that the combination of Goelet, Porter, and AAPA renders obvious the subject matter of claim 10. Accordingly, we sustain the

rejection of this claim under 35 U.S.C. § 103 as unpatentable over these references.

CONCLUSION

The Examiner's rejections are affirmed in part.

DECISION SUMMARY

In summary:

Claim(s) Rejected	35 U.S.C. §	Reference(s)/Basis	Affirmed	Reversed
5, 20	112	Indefiniteness	5, 20	
1, 5, 17, 18, 20	103	Goelet, Porter	1, 5, 17, 18, 20	
6, 8–10, 13, 15, 16, 21–24	103	Goelet, Porter, AAPA	10	6, 8, 9, 13, 15, 16, 21–24
Overall Outcome			1, 5, 10, 17, 18, 20	6, 8, 9, 13, 15, 16, 21–24

TIME PERIOD FOR RESPONSE

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) (2019).

AFFIRMED IN PART