

Filed on behalf of:
Precision Planting, LLC

Paper 20
Filed: October 11, 2024

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

PRECISION PLANTING, LLC,
Petitioner,

v.

MASCHIO GASPARDO S.p.A.,
Patent Owner.

Case IPR2024-00008
U.S. Patent No. 8,770,121

Before BENJAMIN D.M. WOOD, LYNNE H. BROWNE,
and RICHARD H. MARSCHALL, *Administrative Patent Judges*.

PETITIONER'S REPLY

Table of Contents

Table of Authorities	iv
I. Maschio Misconstrues the “Thrust-Bearing-Element” Limitation.	1
A. The TBE Should Not Be Construed as Means-Plus-Function.....	1
1. Maschio’s Means-Plus-Function Argument Is Inconsistent with Its Previous Position in the District Court.	2
2. The Claim Language Conveys Sufficient Structure to Avoid Application of 112(f).	3
B. Even if the TBE Is Construed as Means-Plus-Function, Maschio Misidentifies the Corresponding Structure Disclosed in the Specification.	7
1. The Specification Expressly Identifies the TBE’s Corresponding Structure and Clearly Links Those Elements to the TBE’s Thrust-Bearing Function.	8
2. Maschio Misidentifies the TBE’s Corresponding Structure, Incorporating Extraneous Elements and Omitting Expressly Identified Elements.	12
II. VenHuizen Anticipates the Challenged Claims (Ground 1).	16
A. Maschio’s Expert Admits VenHuizen Anticipates Under the Board’s Present Construction of “Thrust-Bearing Element.”	16
B. Even if the TBE Is Construed as Means-Plus-Function, VenHuizen Anticipates.	17
C. VenHuizen Anticipates Maschio’s Incorrect Means-Plus-Function Construction Because VenHuizen Discloses Equivalent Structure Performing the Same Function.....	20
III. Amazone, AAPA, and Fiorido Render the Challenged Claims Obvious (Ground 4).	24
A. Modifying Amazone to Have a TBE Would Have Been Obvious.	25

B.	Amazone, AAPA, and Fiorido Obviate the Challenged Claims Under Maschio's § 112(f) Construction	28
C.	Maschio Has Failed to Establish Objective Indicia of Nonobviousness.	30
1.	No Evidence of Copying Exists.....	30
2.	Maschio Has Failed to Establish Long-Felt Need or Failure by Others.	32
IV.	Conclusion	33
	Certificate of Word Count Compliance	34
	Certificate of Service	35

Table of Authorities

Cases

<i>Apex Inc. v. Raritan Computer, Inc.</i> 325 F.3d 1364 (Fed. Cir. 2003)	3, 4, 7
<i>Asyst Technologies, Inc. v. Empak, Inc.</i> 268 F.3d 1364 (Fed. Cir. 2001)	13
<i>B. Braun Medical, Inc. v. Abbott Laboratories</i> 124 F.3d 1419 (Fed. Cir. 1997)	8
<i>ClassCo, Inc. v. Apple, Inc.</i> 838 F.3d 1214 (Fed. Cir. 2016)	32
<i>Egenera, Inc. v. Cisco Systems, Inc.</i> 972 F.3d 1367 (Fed. Cir. 2020)	1
<i>In re Gleave</i> 560 F.3d 1331 (Fed. Cir. 2009)	20
<i>Inventio AG v. ThyssenKrupp Elevator Americas Corp.</i> 649 F.3d 1350 (Fed. Cir. 2011)	4
<i>Laitram Corp. v. Rexnord, Inc.</i> 939 F.2d 1533 (Fed. Cir. 1991)	14
<i>Micro Chemical, Inc. v. Great Plains Chemical Co.</i> 194 F.3d 1250 (Fed. Cir. 1999)	11
<i>Northrop Grumman Corp. v. Intel Corp.</i> 325 F.3d 1346 (Fed. Cir. 2003)	11
<i>Personalized Media Communications, LLC v. International Trade Commission</i> 161 F.3d 696 (Fed. Cir. 1998)	7
<i>Rodime PLC v. Seagate Technology, Inc.</i> 174 F.3d 1294 (Fed. Cir. 1999)	7
<i>Samsung Electronics America, Inc. v. Cobblestone Wireless, LLC</i> No. IPR2024-00319, 2024 WL 3104509 (P.T.A.B. June 24, 2024)	2

Sanofi–Aventis U.S. LLC v. Immunex Corp.

No. IPR2017-01129, 2017 WL 4457580 (P.T.A.B. Oct. 4, 2017).....3

Williamson v. Citrix Online, LLC

792 F.3d 1339 (Fed. Cir. 2015) 1, 4, 7

Zeroclick, LLC v. Apple Inc.

891 F.3d 1003 (Fed. Cir. 2018) 1

Statutes

35 U.S.C. § 112..... passim

Regulations

37 C.F.R. § 42.24 37

37 C.F.R. § 42.6 38

I. Maschio Misconstrues the “Thrust-Bearing-Element” Limitation.

A. The TBE Should Not Be Construed as Means-Plus-Function.

Maschio misapplies the law in arguing that “thrust-bearing element” (“TBE”) is a means-plus-function limitation under 35 U.S.C. § 112(f). “We presume that claim terms with the word ‘means’ invoke § 112(f) and that claim terms without the word ‘means’ do not.” *Egenera, Inc. v. Cisco Sys., Inc.*, 972 F.3d 1367, 1372 (Fed. Cir. 2020). While a generic term like “element” “*may be* used in a manner that is tantamount to using the word ‘means,’” *Williamson v. Citrix Online, LLC*, 792 F.3d 1339, 1350 (Fed. Cir. 2015) (*en banc*) (emphasis added), it is “erroneous” to argue—as Maschio does—that any word other than “means” creates a presumption in favor of § 112(f), *Zeroclick, LLC v. Apple Inc.*, 891 F.3d 1003, 1008 (Fed. Cir. 2018). As the PTO expressly cautions in the March 2024 Memorandum cited by Maschio: “a claim limitation that does not use the term ‘means’ or ‘step’ triggers the presumption that § 112(f) does not apply.” (Ex.2015 at 2.)

Thus, the TBE is presumed *not* to be a means-plus-function limitation—a presumption that is overcome only if Maschio “demonstrates that the claim term fails to recite sufficiently definite structure or else recites function without reciting sufficient structure for performing that function.” *Williamson*, 792 F.3d at 1348 (citation omitted, cleaned up). As shown below, the claim language conveys sufficient structure to avoid application of § 112(f).

1. Maschio's Means-Plus-Function Argument Is Inconsistent with Its Previous Position in the District Court.

Although Maschio argues to the Board that the claim language fails to impart sufficient structure to the TBE, Maschio took the opposite position in the district court—arguing that “thrust-bearing” is “a well-known term in the art” with a “plain and ordinary meaning to a person of skill in the art.” (Ex.1022 at 43; *see also id.* at 52.) Maschio now argues that “thrust-bearing” “does not describe the physical structure of the TBE such as the type or shape of the components that perform the claimed function.” (Paper 17 at 8–9.) But in the district court, Maschio argued there was “no dispute” that “‘thrust-bearing’ must include a *bearing*” as understood by a POSA. (Ex.1022 at 43–44.) This is consistent with the position Maschio had taken earlier in an EPO opposition proceeding involving the '121 patent's European counterpart—*i.e.*, that “thrust-bearing” relates “to the presence of a thrust bearing element which is a device having a clear and precise meaning in the art.” *Id.* at 50–51.

Because the Board applies the same claim-construction standard that district courts apply, Maschio's earlier argument that “thrust-bearing” connotes both structure and function “undermin[es] its case” to the Board that TBE should now be construed as means-plus-function. *Samsung Elecs. Am., Inc. v. Cobblestone Wireless, LLC*, No. IPR2024-00319, 2024 WL 3104509, at *9 (P.T.A.B. June 24, 2024). But even when the broadest-reasonable-interpretation standard applied in IPR

proceedings, the Board noted that the differing claim-construction standards “d[id] not justify taking a different position with respect to § 112[(f)] before the district court” than before the Board. *Sanofi–Aventis U.S. LLC v. Immunex Corp.*, No. IPR2017-01129, 2017 WL 4457580, at *5 (P.T.A.B. Oct. 4, 2017).

Thus, by Maschio’s own prior admission, the claim language conveys sufficient structure to avoid application of § 112(f). But even absent that admission, a full analysis of the intrinsic and extrinsic evidence leads to the same conclusion.

2. The Claim Language Conveys Sufficient Structure to Avoid Application of 112(f).

Having erroneously concluded that the TBE is presumed to be means-plus-function notwithstanding the absence of the word “means,” Maschio spends a single paragraph arguing that the claim recites insufficient structure to avoid application of § 112(f). (Paper 17 at 8–9.) The crux of Maschio’s argument is that the term “thrust-bearing” “explains what the [TBE] does ... but not what the TBE looks like.” (*Id.* at 8.) Similarly, Maschio and its expert, Dr. Harry Dankowicz, isolate “the generic term ‘element’” and argue that, by itself, it does not connote sufficient structure. (*Id.* at 8; Ex.2012 ¶50.) But it is legally erroneous to focus on “single words of the limitations, ... as opposed to the limitations as a whole,” in determining whether sufficient structure is recited. *Apex Inc. v. Raritan Computer, Inc.*, 325 F.3d 1364, 1372 (Fed. Cir. 2003). This is especially true when a limitation lacks the term

“means,” and the presumption against § 112(f) must be overcome by the claim language. *E.g., id.*

“Claims are interpreted in light of the written description supporting them, and that is true whether or not the claim construction involves interpreting a ‘means’ clause.” *Inventio AG v. ThyssenKrupp Elevator Ams. Corp.*, 649 F.3d 1350, 1356 (Fed. Cir. 2011), *overruled on other grounds by Williamson*, 792 F.3d at 1339. Thus, “it is proper to consult the intrinsic record, including the written description,” in determining whether the presumption “that a claim lacking the term ‘means’ recites sufficiently definite structure” has been successfully rebutted. *Id.* at 1357. Further, because determining whether a claim limitation is means-plus-function requires the understanding of a POSA, it is also appropriate to look to extrinsic evidence, including expert testimony, to assist the trier of fact. *Apex Inc.*, 325 F.3d at 1374.

A full examination of the intrinsic and extrinsic evidence demonstrates that the TBE is not means-plus-function. First, both independent claims of the '121 patent recite that the TBE is an element “of the sowing disc.” Ex.1001, at 5–6, 4:37, 6:3. By itself, the term “sowing disc” conveys structure; indeed, the term “disc” standing alone conveys structure. (Ex.1021 ¶15.) The claim language further teaches that the sowing disc:

- is “rotated by a motor-driven transmission drive shaft”
(Ex.1001 at 5–6, 4:15–16, 5:7–8);

- is “interposed between the fixed and movable portions” of the housing of the seed distribution element and has “opposed surfaces delimiting the chambers” (*id.*, 4:24–26, 5:16–18);
- has “at least one ring of selector holes extending between the opposed surfaces” (*id.*, 4:27–28, 5:19–20); and
- has a “facing surface” that is “capable of sliding contact” with “a seal which is arranged on the movable portion” of the housing when the two portions are closed against each other (*id.*, 4:29–32, 5:21–23).

(*See also* Ex.1021 ¶15.)

As shown in the reply declaration of Precision's expert, Dr. Mark Fleming, a TBE is in fact a name for a structure. (*Id.* ¶14.) In the context of the claim language, a POSA would understand that to be a thrust bearing for a spinning disc that is exerting thrust in a known direction, a structure having a conforming surface area contacting the disc, and additional structure for transferring thrust to a fixture (*i.e.*, the housing) where it will ultimately be absorbed, would be required. (*Id.*) Moreover, the word “bearing” itself connotes structure that resists a force. (*Id.*) Thus, a classification of structures is connoted or named by this adjectival phrase. (*Id.*) Maschio's expert admits as much, declaring that “the embodiment of the thrust-bearing element (hyphen) disclosed in the '121 patent resembles the structure and function of a well-known ‘thrust bearing’ (no hyphen).” (Ex.2012 ¶55.)

Even if the TBE were not a name for structure by itself, the remaining claim language in combination identifies that the thrust-bearing element is located in the movable portion, is supported rotatably, and withstands at least some of the axial load produced by the disc on the seal. (Ex.1001 at 5–6, 4:38–40, 6:4–6; Ex.1021 ¶16.) A POSA would understand that this language connotes structure because a load must be absorbed in the movable portion of the housing, and the load will be absorbed by a rotatable structure that must transfer the load to a fixture to perform the required function. (Ex.1021 ¶16.) This clearly implies a spinning, rigid structure that contacts the sowing disc but nevertheless transfers the load to the housing. (*Id.*) A finite number of structures is possible to accomplish this, and they will include a shaft connected to a rigid structure in contact with the sowing disc. (*Id.*) The shaft of the thrust-bearing element will rotate about its axis but must not translate. (*Id.*) This rotation without translation requires a seat to support the shaft in a specific fashion. (*Id.*) The shaft by itself will not receive the thrust load from the sowing disc unless there is a thrust-bearing plate coupled to the shaft that will interface with the sowing disc. (*Id.*) This connotes additional structure for receiving the thrust load from the sowing disc and resisting the load with the seat. (*Id.*)

Finally, TBEs are described in the prior art, which further supports that the term connotes structure. The AAPA discloses a TBE that relieves the heavy load on the seal and is described as being located in the fixed portion of the housing.

(*Id.* ¶18.) Further, the AAPA thrust-bearing element is disclosed to be rotatable with the sowing disc. (*Id.*)

To avoid application of § 112(f), the structure recited in the claim need not exhaustively “recite every last detail of structure disclosed in the specification” for performing the claimed function. *Rodime PLC v. Seagate Tech., Inc.*, 174 F.3d 1294, 1304 (Fed. Cir. 1999). The claim need only recite “sufficient structure for performing that function.” *Williamson*, 792 F.3d at 1348 (citation omitted). To be sufficient, the recitation need not “specifically evoke a particular structure” in the mind of a POSA but may convey “a variety of structures” known in the art. *Personalized Media Commc'ns, LLC v. Int'l Trade Comm'n*, 161 F.3d 696, 705 (Fed. Cir. 1998).

Because Maschio asserts that a claim limitation lacking the word “means” is in fact means-plus-function, § 112(f) cannot apply unless Maschio proves by a preponderance of the evidence that the claim fails to recite sufficient structure. *Apex Inc.*, 325 F.3d at 1372. As shown above, the weight of evidence supports the presumption against applying § 112(f) to the TBE.

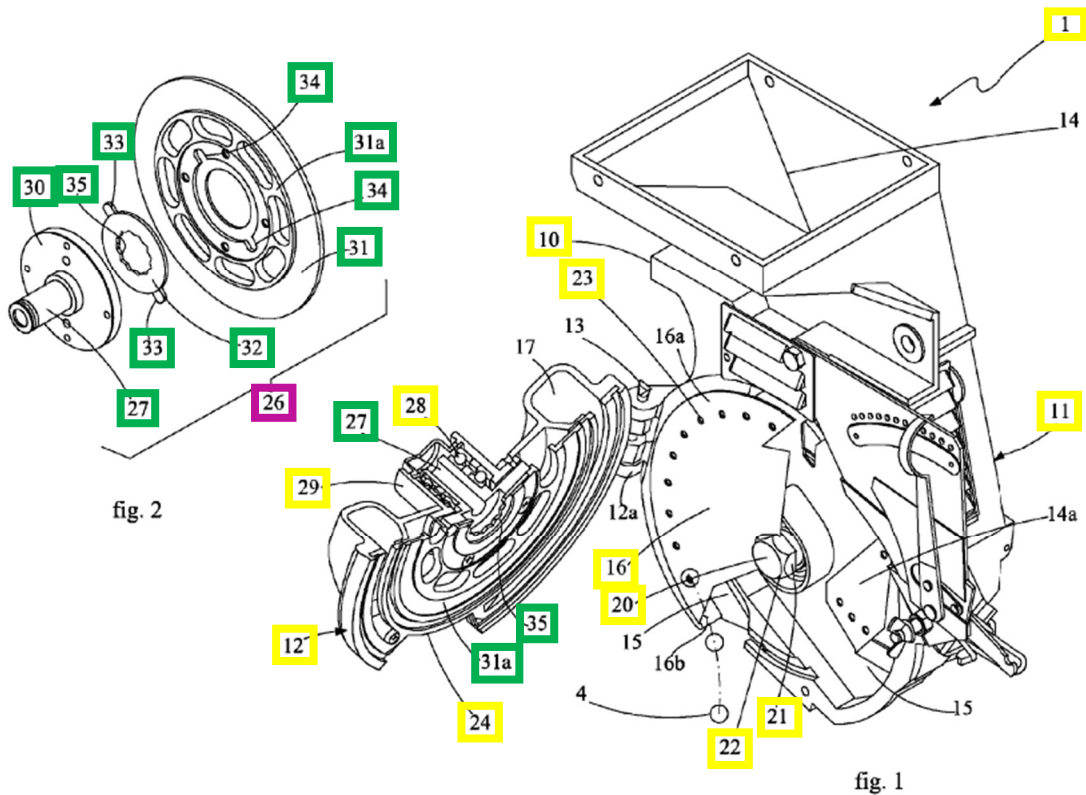
B. Even if the TBE Is Construed as Means-Plus-Function, Maschio Misidentifies the Corresponding Structure Disclosed in the Specification.

If the Board agrees with Maschio's argument that the TBE is means-plus-function, it should nonetheless reject Maschio's proposed construction. A means-

plus-function claim limitation “shall be construed to cover the *corresponding* structure ... described in the specification and equivalents thereof.” 35 U.S.C. § 112(f) (emphasis added). “[S]tructure disclosed in the specification is ‘corresponding’ structure only if the specification or prosecution history clearly links or associates that structure to the function recited in the claim.” *B. Braun Med., Inc. v. Abbott Labs.*, 124 F.3d 1419, 1424 (Fed. Cir. 1997). In its proposed construction, Maschio attempts to include certain structural elements *not* disclosed in the specification as performing the claimed function while ignoring other structural elements that *are* expressly disclosed as performing the claimed function.

1. The Specification Expressly Identifies the TBE's Corresponding Structure and Clearly Links Those Elements to the TBE's Thrust-Bearing Function.

The specification could hardly be clearer in identifying the corresponding structure, stating that the TBE is “indicated as a whole by 26.” (Ex.1001 at 5, col. 3:22–23 (highlighting added).) Lead number 26 appears only once in the drawings, expressly encompassing all the green-highlighted structures identified in Figure 2:



(*Id.* at 2 (annotated).) As described more fully in the specification:

The thrust-bearing element **26** comprises a shaft **27** rotatably mounted by means of bearings **28** in a seat **29** of the movable portion **12**. The shaft **27** has flanging **30** by means of which it is fixed to a thrust-bearing plate **31** which can bear on that surface of the disc which faces the seal **24** in a zone radially inside the ring of holes **23** in order to withstand at least some of the axial load produced by the disc **16** on the seal **24**.

The bearing between the thrust-bearing plate **31** and the disc **16** takes place in the region of a ring **31a** in relief on the surface of the plate which faces the disc **16**.

The thrust-bearing element 26 is driven in rotation with the sowing disc 16 when the fixed and movable portions 11, 12 are closed against one another by means of a drive element 32 which comprises a coupling device constrained for rotation with the thrust-bearing plate but with radial and/or circumferential clearance in such a way as to be self-centred [*sic*] in the rotational coupling with the drive shaft of the disc 16. For this purpose, in the present form of embodiment, the drive element 32 is coupled with limited radial and/or circumferential clearance to the element 26 by means of one (or more) appendage(s) 33 protruding radially towards the outside and fitted into corresponding seats 34 of the plate.

The drive element 32 is coupled by means of an internal polygonal profile 35 (similar to that adopted for box-end wrenches) to the polygonal profile 21 of the free end of the shaft 20, the chamfers 22 of which serve to facilitate the centring [*sic*] of the two profiles and the respective engagement.

(*Id.* at 5, 3:25–52 (highlighting added).)

Only parts 27, 30, 31, 31a, 32, 33, 34, and 35 are identified as parts of the TBE at 26. (*Id.* at 2; *id.* at 5, 3:22–23; Ex.1021 ¶20.) And the specification expressly associates five key parts of the TBE with performing the thrust-bearing function:

- “The shaft 27 has flanging 30 by means of which it is fixed to a thrust-bearing plate 31 *which can bear on*” the surface

of the sowing disc. (Ex.1001 at 5, 3:27–29 (emphasis and highlighting added).)

- “The *bearing ... takes place* in the region of a ring **31a** in relief on the surface of the plate.” (*Id.*, 3:33–35 (emphasis and highlighting added).)
- The drive element **32** “comprises a coupling device constrained for *rotation with the thrust-bearing plate*.” (*Id.*, 3:38–52 (emphasis and highlighting added).)

Thus, if the TBE is means-plus-function, the five green-highlighted elements that are both expressly indicated by **26** as parts of the TBE and expressly identified as performing the TBE's thrust-bearing function are part of the corresponding structure. *Cf. Northrop Grumman Corp. v. Intel Corp.*, 325 F.3d 1346, 1352 (Fed. Cir. 2003) (“Features that do not perform the recited function do not constitute corresponding structure and thus do not serve as claim limitations.”). The remaining green-highlighted elements and *all* yellow-highlighted elements of the seed-distribution unit described in the specification are *not* identified as performing the TBE's thrust-bearing function and thus are not corresponding structure. *See Micro Chem., Inc. v. Great Plains Chem. Co.*, 194 F.3d 1250, 1258 (Fed. Cir. 1999) (§ 112(f) does not “permit incorporation of structure from the written description beyond that necessary to perform the claimed function”).

2. Maschio Misidentifies the TBE's Corresponding Structure, Incorporating Extraneous Elements and Omitting Expressly Identified Elements.

Maschio purports to limit the TBE's corresponding structure to just three elements: the shaft 27, bearings 28, and a seat 29 of the movable portion. (Paper 17 at 9–10.) This is both over- and underinclusive. The bearings 28 and seat 29 are identified only once in the specification and are never affirmatively identified as accomplishing the TBE's claimed function of bearing thrust. Only the shaft 27, flanging 30, thrust-bearing plate 31, ring 31a, and drive element 32 are identified as “bear[ing] on the surface of the disc” and “withstand[ing] at least some of the axial load” of the disc on the seal. (Ex.1001 at 5, 3:25–32.)

Indeed, the specification's description of the seat 29 shows that it *cannot* be part of the TBE. As Maschio emphasizes, the seat 29 is part of the movable portion 12. (Paper 17 at 12.) The movable portion 12, in turn, is part of the housing 10. (Ex.1001 at 4, 2:44–47.) **As shown in Figure 1, the movable portion 12 of the housing 10 is a solid piece of material, and the seat 29 is merely the central portion of that solid piece of material.** (Ex.1001 at 2.) Thus, the seat 29 is static and does not rotate with respect to the rest of the movable portion 12—or, for that matter, with respect to any other part of the housing 10 of the seed distribution element 1. But every claim of the '121 patent requires the TBE to be supported *rotatably* in the movable portion of the housing. (Ex.1001 at 5–6, 4:36–40, 6:2–6.) Although

Maschio's proposed claim construction erroneously equates "supported rotatably in" with "rotatably mounted in" (Paper 17 at 14; *see also id.* at 12), Maschio does not dispute that the TBE must be *rotatable* with respect to movable portion 12. Because the seat 29 does not rotate, it cannot be part of the corresponding structure of a TBE that must be supported rotatably in the movable portion of the housing.

Maschio may attempt to argue that the seat 29 and bearings 28 *enable* the identified parts of the TBE to perform the claimed function. But that would not qualify them as corresponding structure. *See Asyst Techs., Inc. v. Empak, Inc.*, 268 F.3d 1364, 1371 (Fed. Cir. 2001) (corresponding structure must actually perform recited function, not merely enable pertinent structure to operate as intended). As elements that—at most—enable the expressly identified parts of the TBE to perform their function, the bearings 28 and seat 29 cannot be included as part of the corresponding structure.

Contrary to Maschio's assertion, the seat 29 is the *only* part of the purported three-part "TBE" identified by Maschio that is expressly recited as "of the movable portion" of the seed distribution element. (Ex.1001 at 5, 3:25–27.) Because the seat 29 (and bearings 28) are not part of the TBE's corresponding structure, the rationale for Maschio's position that the TBE must be "mounted on" the movable portion cannot stand. (*See* Paper 17 at 12–13.) Maschio's arguments are nothing more than garden-variety attempts to import limitations into the claims from the specification.

(*See id.* at 13.) The shaft 27, flanging 30, thrust-bearing plate 31, ring 31a, and drive element 32 of the TBE need only be “supported rotatably in” the movable portion of the housing, as recited in the claims and as the Board has previously found. (Ex.1001 at 5–6, 4:36–40, 6:2–6; Paper 12 at 10–11.)

Maschio misuses the doctrine of claim differentiation to strip the flanging 30, thrust-bearing plate 31, ring 31a, and drive element 32 from the corresponding structure of the TBE. (Paper 17 at 11; Ex.2012 ¶52.) The Federal Circuit has expressly rejected such an argument.

Simply stated, the judicially developed guide to claim interpretation known as “claim differentiation” cannot override [§ 112(f)]. A means-plus-function limitation is not made open-ended by the presence of another claim specifically claiming the disclosed structure which underlies the means clause or an equivalent of that structure.... We hold that one cannot escape [the statutory] mandate by merely adding a claim or claims specifically reciting such structure or structures.

Laitram Corp. v. Rexnord, Inc., 939 F.2d 1533, 1538 (Fed. Cir. 1991). Thus, the recitation in dependent claims of parts of the TBE expressly indicated by 26 and affirmatively identified as accomplishing the thrust-bearing function does not prevent those parts from being included as elements of the TBE’s corresponding structure.

As Maschio's expert admits, the term "thrust-bearing" is adjectival. (Ex.2012 ¶55.) Thus, the thrust-bearing element must bear thrust—*i.e.*, "withstand at least some of the axial load" produced by the sowing disc on the seal. (Ex.1001 at 5, 3:27–32; *see also* Ex.2025 at 9, Tr.35:7–19.) But the '121 patent does not teach that the shaft 27 of the TBE is capable of bearing thrust by itself. (Ex.1021 ¶20.) Instead, the shaft includes flanging 30 connected to a thrust-bearing plate 31 that bears on the surface of the sowing disc. (*Id.*) And the drive element 32 ensures that the thrust-bearing plate 31 will rotate with the sowing disc. (*Id.*)

The omission of the thrust-bearing plate 31 as part of the TBE is the most egregious flaw in Maschio's proposed construction. The name alone makes clear that this element is essential to accomplish the claimed function of bearing the thrust produced by the sowing disc on the seal. If the thrust-bearing plate 31 were eliminated from the corresponding structure as Maschio suggests, nothing would be in contact with the sowing disc, and the thrust-bearing element's function could not be performed by the remaining structure. (*Id.* ¶21.)

If the Board determines that the TBE is means-plus-function, it should nonetheless reject Maschio's proposed claim construction, which omits corresponding structure identified in the specification as performing the disclosed function and incorporates extraneous elements *not* identified in the specification as performing the disclosed function. Moreover, Maschio's proposal is a transparent

attempt to undo the findings of both the Board and the district court that “supported rotatably in” does **not** mean “mounted on” (Paper 12 at 10–11; Ex.2003 at 13)—without directly challenging the Board’s construction.

Once the corresponding structures that are indicated in the specification as parts of the TBE that perform the disclosed function are properly identified, Maschio’s proposed construction becomes untenable. If the Board believes a means-plus-function construction of “thrust-bearing element” is necessary, it should construe the term to mean “a structure comprising a shaft with flanging fixed to a thrust-bearing plate and which entire structure is connected to rotate with and can bear on that surface of the sowing disc which faces the seal in order to withstand at least some of the axial load produced by the sowing disc on the seal.”

II. VenHuizen Anticipates the Challenged Claims (Ground 1).

A. Maschio’s Expert Admits VenHuizen Anticipates Under the Board’s Present Construction of “Thrust-Bearing Element.”

The Board’s Institution Order found VenHuizen anticipates each challenged claim. (Paper 12 at 24–27.) Based upon Maschio’s Response, the only open issue is whether VenHuizen discloses claims 1–3, 7–12, and 16’s recited “TBE under [*Maschio’s newly proposed*] interpretation of that limitation.” (Paper 17 at 18.) Maschio’s expert agrees:

- if the Board preserves its preliminary construction of TBE, VenHuizen anticipates the challenged claims; and

- the *sole* reason VenHuizen does not anticipate is because it lacks Maschio's construed TBE.

(Ex.1023 at 87:14–89:19; *see also* Paper 17 at 18 (“The anticipation grounds based on VenHuizen fail because it does not disclose a TBE under the correct interpretation of that limitation.”).) Consequently, if the Board maintains its present TBE construction, VenHuizen anticipates the challenged claims.

B. Even if the TBE Is Construed as Means-Plus-Function, VenHuizen Anticipates.

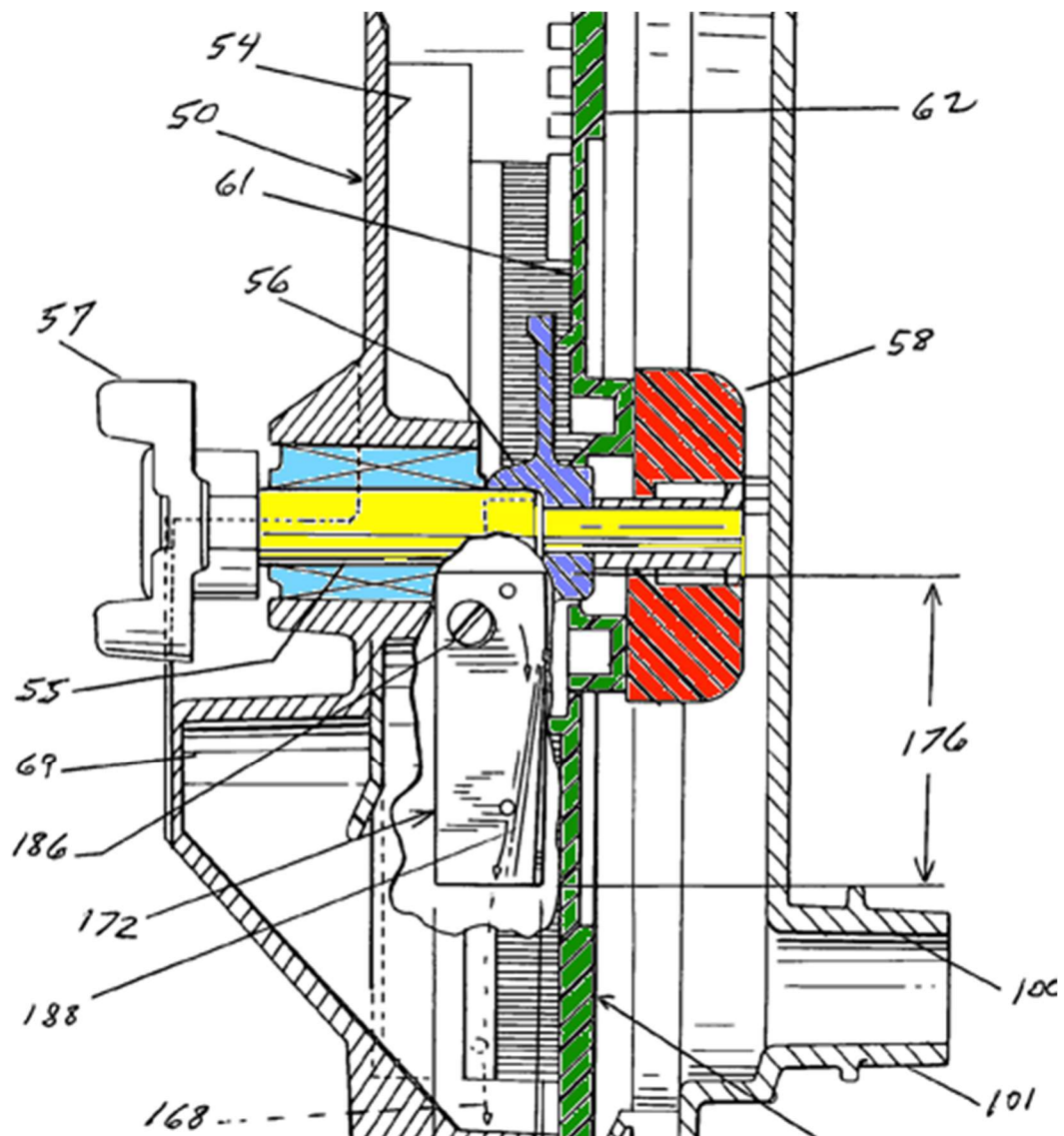
Even if the Board finds that Maschio is partly correct and the TBE is a means-plus-function limitation, VenHuizen still anticipates the *properly* construed scope of that limitation. Maschio's expert admits the following about VenHuizen:

- A shaft (yellow) is mounted in a seat with bearings marked by X's (light blue). (Ex.1023 at 90:9–91:16.)¹
- Handle 58 (red) is rotatably mounted relative to the hub 56 (purple). (*Id.*, 91:17–24.)
- In operation, handle 58 rotates with the sowing disc (green). (*Id.*, 92:19–93:7.)

¹ The color coding is intended to more clearly identify the pertinent structures about which Dr. Dankowicz testified. Dr. Dankowicz did not provide testimony based upon the color coding referenced in this paper.

- When vacuum is applied, handle 58 withstands at least some of the axial load produced by the disc on the seal.

(*Id.*, 94:14–95:12.)



(Ex.1006 a5, Fig. 6 (annotated).)

VenHuizen's above-referenced shaft (yellow) holds handle (red) locked to the shaft via hub (purple) to ensure it spins with the sowing disc and retains the disc against forces from the vacuum. (Ex.1021 ¶23.) Consequently, VenHuizen's shaft,

hub, and handle constitute the “thrust-bearing element” under a proper means-plus-function definition. Indeed, the handle includes a surface area in contact with the sowing disc to resist axial load, spins with the sowing disc and the shaft, which transfers the force absorbed by the handle to the fixture. (*Id.*)

Moreover, even if the shaft, hub, and handle of VenHuizen do not literally meet the TBE requirements, VenHuizen's structure is still anticipatory as equivalent structure. *See* 35 U.S.C. § 112(6)/(f) (“such claim shall be construed to cover the corresponding structure, material, or acts described in the specification *and equivalents thereof*”). VenHuizen's handle performs the function of constraining the movement of the sowing disc when vacuum is applied to absorb some of the forces that would otherwise be applied to the seal. (Ex.1003 ¶86; Ex.1021 ¶23.a.) VenHuizen accomplishes this function in the same way: a rigid rotatable structure located in the movable portion of the housing and within the boundary defined by the peripheral seed holes holds the disk from over exertion of forces on the seal and taking up some of the load and transferring that load to a fixture. (Ex.1021 ¶23.b.) Finally, VenHuizen's structure reaches the same result because some of the forces are applied to the rigid structure of the shaft, hub, and handle rather than the seal, thereby elongating the life of the seal. (Ex.1021 ¶23.c.) Thus, based on Dr. Fleming's testimony and the admissions of Maschio's expert, VenHuizen's structure satisfies

the properly construed scope of a means-plus-function “thrust-bearing element” literally and as an equivalent structure. (Ex.1003 ¶¶77, 79, 81, 86, 87; Ex.1021 ¶24.)

C. VenHuizen Anticipates Maschio's Incorrect Means-Plus-Function Construction Because VenHuizen Discloses Equivalent Structure Performing the Same Function.

Maschio incorrectly argues that “the last limitation of claims 1 and 10 should be interpreted to mean: ‘a shaft rotatably mounted in the movable portion and supported by means of bearings in a seat of the movable portion in order to withstand at least some of the axial load produced by the disc on the seal.’” (Paper 17 at 14.) While Maschio attempts to distinguish VenHuizen's structure because it doesn't *ipsissimis verbis* disclose the '121 patent's limitations and functions (*see, e.g., id.* at 20), the Board already correctly ignored such arguments. (Paper 12 at 26 (citing *In re Gleave*, 560 F.3d 1331, 1334 (Fed. Cir. 2009)).)

Based upon its newly proposed construction, Maschio argues VenHuizen fails to disclose “[iii] a shaft rotatably mounted in the movable portion [ii] and supported by bearings [i] in a seat of the movable portion.” (Paper 17 at 18; *see also id.* at 21.) Notwithstanding this construction, Maschio acknowledges that VenHuizen's “handle 58 is located within the confines of the movable second housing member 90,” “handle 58 is rotatably supported by the retaining hub 56,” and the “hub handle 58 taught by VenHuizen simply clamps or locks the sowing disc against the retaining

hub.” (Paper 17, at 20, 22.) Further, Maschio’s expert agrees VenHuizen discloses almost every single limitation of its newly proposed construction:

Q. All right. And then there is disclosed a shaft 55.
Correct?

A. Indeed.

Q. And this shaft is going to be mounted in a seat where there are bearings, where these X’s are indicated in the figure; is that correct?

A. That is correct.

Q. And those bearings would permit the unrestricted rotation of the shaft relative to the seat?

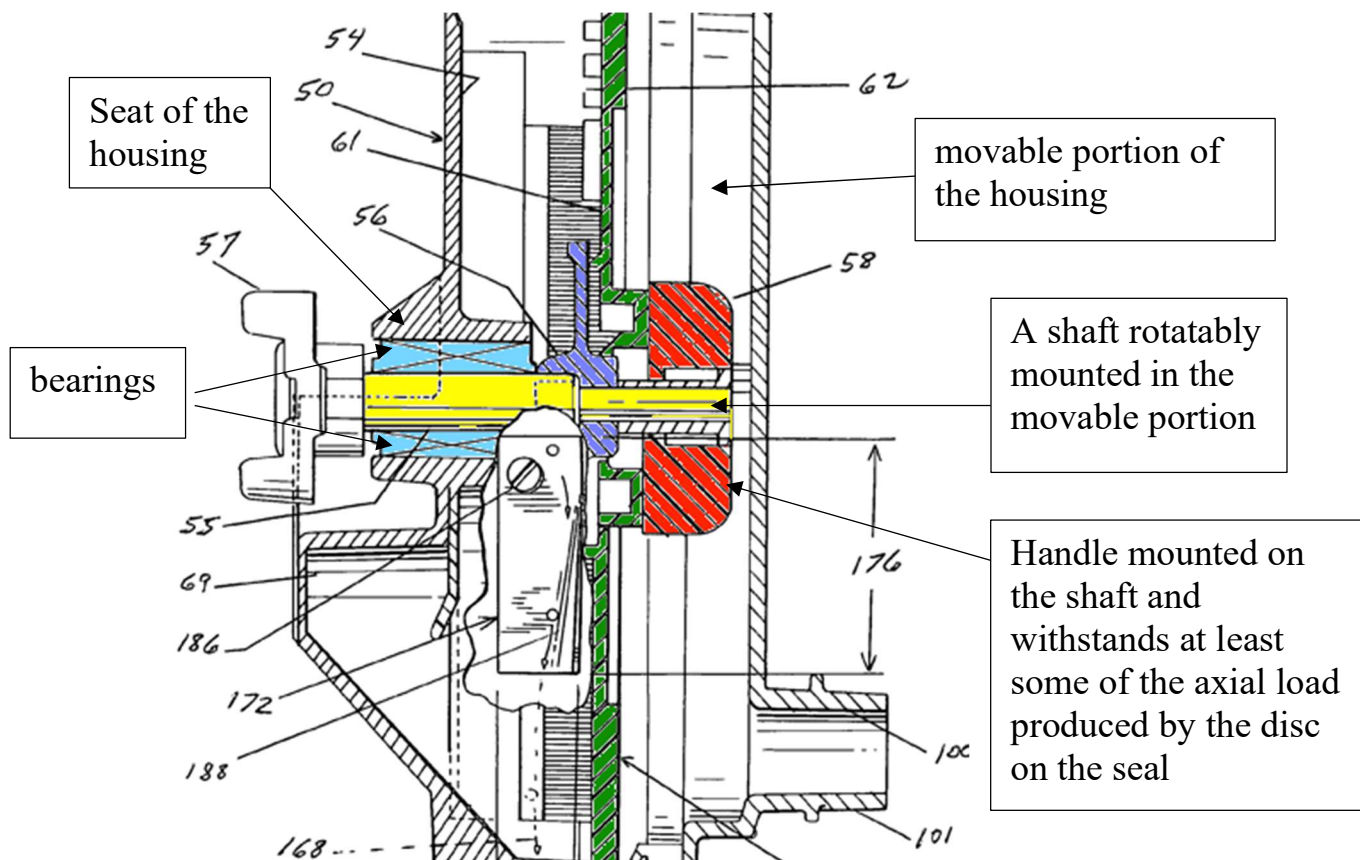
A. I don’t recall whether, and, in fact, I’m sort of saying that in a very positive way, I can’t recall, not simply because of forgetfulness, but I literally don’t think that there is mention of bearings or a seat in the VenHuizen disclosure.

Q. But that’s your understanding of what would be here where these X’s are; correct?

A. That understanding is partially informed by what seems reasonable and partially informed by the deposition of the expert of Petitioner which spoke to the presence of these X’s as being a generic way of describing the presence of bearings. Which makes perfect sense to me.

(Ex.1023, 90:9–91:6.) Thus, Maschio does not dispute Dr. Fleming's testimony that the X's in VenHuizen are, in fact, bearings, rotatably supporting the shaft. (See Ex.2014 at 12, Tr.42:14–44:4.) Nor does Maschio's expert fundamentally dispute the relevant structures present in VenHuizen: a suction chamber present in the movable portion (Ex.1003 ¶¶77, 79, 81); a handle 58 that constrains movement of the sowing disc when vacuum is applied (*id.* ¶86), and the handle on the shaft is rotatably mounted to rotate with the disc (*id.* ¶87).

Maschio's expert's admissions are unsurprising because each of these structures in VenHuizen relates a specific element of Maschio's new proposed construction:



(Ex.1021 ¶25.)

As annotated VenHuizen Figure 6 shows, bearings in the seat of the housing support a shaft that is rotatably mounted therein. The shaft is mounted and is located in the movable portion of the housing. And, as the Board has already found and Maschio's expert does not contest, the handle withstands at least some of the axial load produced by the disc on the seal. (Paper 12 at 26–27.)

Ultimately, Maschio appears to dispute only the location of VenHuizen's "seat and bearings," arguing they are located in the *fixed* portion rather than the *movable* portion. (Paper 17 at 20–21.) This is a distinction without a difference. First, nothing in the TBE limitation requires it to be supported by or otherwise affixed to the movable portion. (Paper 2 at 25–26.) The Board has already reached this conclusion in its construction of "supported rotatably in the movable portion." (Paper 12 at 10–11.) Because Maschio has not challenged this construction, it is now the law of the case. Second, even if the Board revisits its construction of "supported rotatably in the movable portion" via the indirect attack inherent in Maschio's newly proposed means-plus-function construction of TBE, VenHuizen still anticipates because its disclosed structure is within the scope of equivalents. 35 U.S.C. § 112(f).

The only true distinction between the structures required by Maschio and those disclosed by VenHuizen is that the shaft that transfers the axial forces to relieve wear on the seal is in *tension* in VenHuizen and in *compression* in the '121 patent.

(Ex.1021 ¶24.) But the structures are performing the claimed function in substantially the same way to achieve to achieve substantially the same result.

For the same reasons discussed above with respect to the shaft, hub, and handle, VenHuizen's structure is equivalent because the shaft, hub, and handle accomplish the same function (absorb some of the axial load that would otherwise be applied to the seal under vacuum) in the same way (by a rigid spinning structure that holds the disk from overexertion of forces on the seal and transfers some of the force through a shaft, thereby taking up some of the load) with the same result (some of the axial forces are applied to the rigid structure rather than the seal, thereby elongating the life of the seal). (Ex.1021 ¶23.a–c.) Maschio's expert agrees. (Ex.1023 at 92:19–93:7, 94:14–95:12.)

Regardless *where* the seat of VenHuizen's structure is located, its structure is equivalent to the claimed TBE.

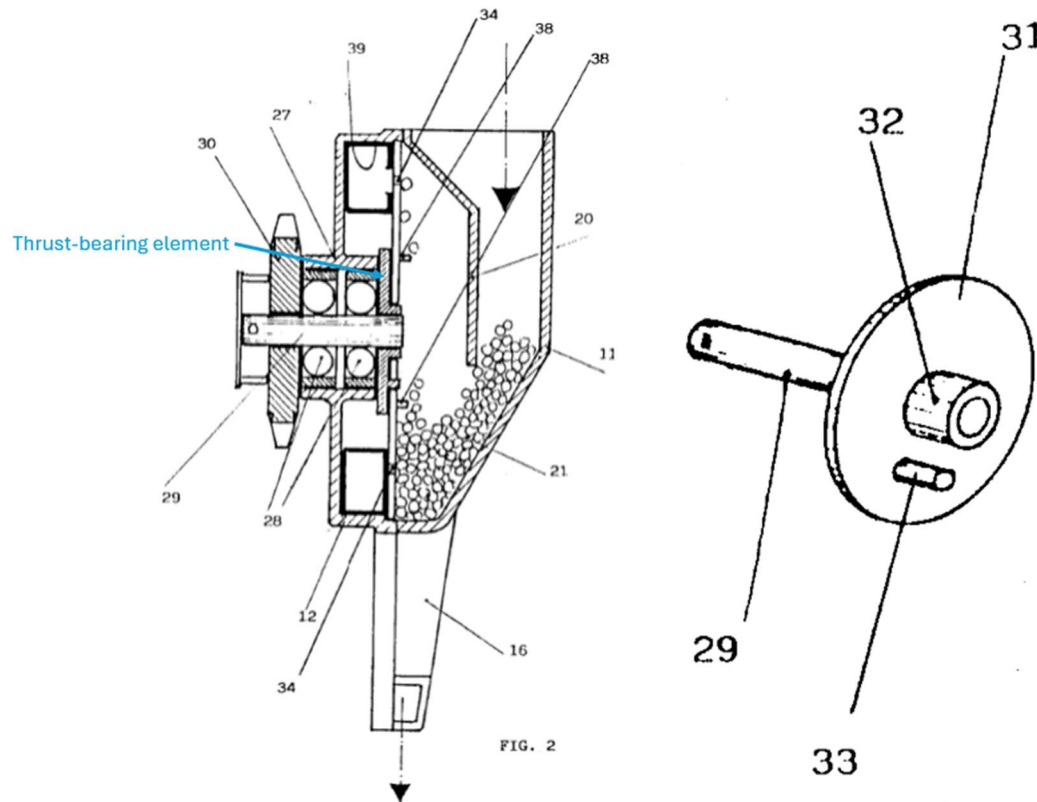
III. Amazone, AAPA, and Fiorido Render the Challenged Claims Obvious (Ground 4).

Amazone explicitly discloses every limitation in claims 1 and 10 except a TBE. (Paper 2 at 75–83.) Maschio and its expert do not dispute this. (Ex.2012 ¶¶82–83)

A. Modifying Amazone to Have a TBE Would Have Been Obvious.

As argued in the Petition, the AAPA acknowledges the problem of seal wear was known.² (Paper 2 at 84.) The Amazone manual discusses the problem of seal damage (of which seal wear is one form). (Ex.1011 at 166; Ex.1021 ¶26.) Furthermore, the AAPA identifies a rotatable thrust-bearing element as a known solution to that problem. (Ex.1001 at 4, 1:53–57; Ex.1003 ¶119.) While the AAPA identifies the known thrust-bearing element as being mounted on the fixed portion of the housing, as Maschio's expert admitted, a POSA looking at Amazone would have a reason to modify the movable portion of the Amazone housing with a TBE because it is the movable side of the Amazone housing that contains the vacuum and has a seal that will experience wear. (Ex.1023 at 136:7–137:7.) A POSA would modify the circular element with the disclosure of Fiorido such that the modified structure would contact the sowing disc. (Paper 2 at 83–85; Ex.1001 at 4, 1:53–55.)

² The Institution Decision incorrectly states that Petitioner did not rely on AAPA to support the Ground 4 combination as applied to claims 1 and 10. (*See* Paper 2 at 84; Paper 7 at 37.)



Fiorido teaches a driving disk 31, centering dowel 32, and driving pin 33 “to which [perforated disk 13] is connected.” (Ex.1007 at 4, 5:49–55.) As shown in Figure 2 above, the driving disk 31 is in contact with the sowing disc, and a POSA would understand that driving disk 31 would absorb at least some of the axial load produced on the seal by the sowing disc when a vacuum is applied. (Ex.1003 ¶54.) Although Maschio disputes whether Figure 2 actually shows the sowing disc and driving disk in contact, even its expert agrees that a POSA at the time of the ’121 invention would have understood that *if* this structure did contact the sowing disc it would absorb some of the axial load. (Ex.1023 at 127:25–129:1.) Accordingly, while

Fiorido does not expressly state that this structure is acting as a “thrust-bearing element,” it does expressly state it is “connected,” which means “in contact” when assembled as depicted with Figure 2. (Ex.1007 at 4, 5:49–55.) And even if it were not so assembled, a POSA would know of its *capability* to act as a TBE if the two disks were in contact. Thus, the structure of Fiorido in the form of a rotatable disk in contact with the sowing disc and in combination with a rotatable shaft on the seal side of the sowing disc will withstand some of the axial load produced by the sowing disc on the seal. (Ex.1007 at 7, Fig.2; Ex.1021 ¶¶27–28, 35.)

The AAPA teaches that TBEs have been used to relieve the heavy load on the seal: “seed drills have been developed which are equipped with a thrust-bearing element which relieves the heavy load on the seal.” (Ex.1001 at 4, 1:53–55.) Thus, a POSA would be motivated to combine the disk 31 and rotatable shaft of Fiorido with Amazone to relieve the heavy load on the seal and alleviate seal damage.

Checking the following functional parts for damage, exchanging if necessary:

1. Singling disc (Fig. 227/1)
2. PE-foam profile sealing (Fig. 227/2)
3. Suction lid with suction kidney (Fig. 227/3)

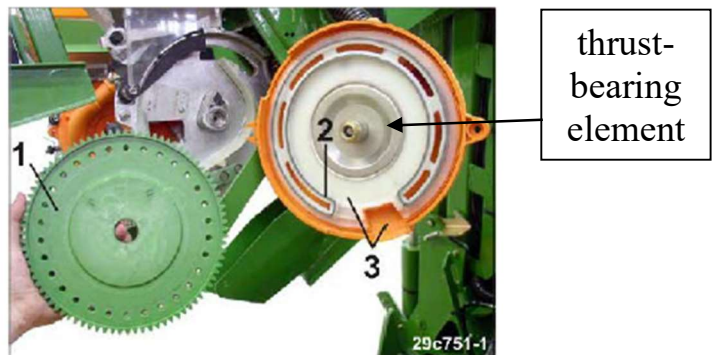


Fig. 227

A POSA would have a reasonable expectation of success with this modification since it is a simple combination of concepts that already existed in the

prior art. The substituted parts, including a disk attached to a rotatable shaft, would continue to work in the same manner to achieve a known function. (Ex.1021 ¶29; Ex.1003 ¶204.) Indeed, Maschio's expert admitted that if a POSA were motivated to make the combination, it would be very straightforward to accomplish. (Ex.1023 at 145:1–147:20.)

Thus, Amazone in combination with the teachings of Fiorido and AAPA renders obvious each challenged claim of the '121 patent.

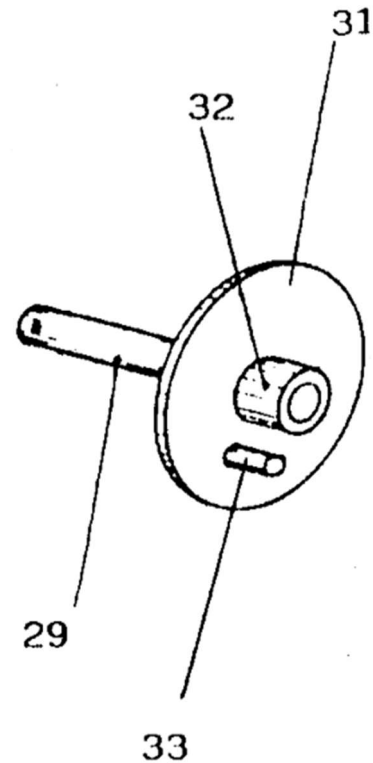
B. Amazone, AAPA, and Fiorido Obviate the Challenged Claims Under Maschio's § 112(f) Construction

Even if the Board concludes that TBE is a means-plus-function limitation, Amazone in combination with Fiorido's disclosure is within the scope of equivalents.

As explained above, a POSA would be motivated to modify the raised circular element of Amazone with the drive disk, drive pin, centering dowel, and rotatable shaft of Fiorido to address the known seal wear problem. These structures would be placed in a seat with a bearing race as disclosed by Fiorido on the movable part of the Amazone housing. (Ex.1003 ¶119; Ex.1021 ¶33.) Further, a POSA would have a reasonable expectation of success in making this modification which is

straightforward and uses known structure that a POSA would understand could be used for this function. (Ex.1003 ¶119; Ex.1021 ¶33.)

The structure proposed to modify Amazone is nearly identical to, and at least equivalent to the disclosed structure from the '121 patent. Like the '121 patent, there is a shaft, which in combination with the disk 31 that has a centering dowel 32 and drive pin 33 is at least equivalent to the shaft 27, flanging 30, drive element 32, and plate 31 of the '121 patent. The modified structure would perform substantially the same function, in substantially the same way, to achieve substantially the same result.



The function of the thrust-bearing element is to constrain the movement of the sowing disc when vacuum is applied within the housing thereby absorbing some of the forces that would otherwise have been applied to the seal. (Ex.1001 at 5, 4:38–40; Ex.1021 ¶¶23.a, 35.) This is accomplished with a rotatable rigid structure (Fiorido disk 31 in combination with shaft 29) located in the movable portion of the housing and the plate having a diameter within the boundary defined by the peripheral seed holes to constrain the sowing disc contact on the seal and taking up some of the load by transferring that load to a fixture. (Ex.1001 at 5, 3:25–32;

Ex.1021 ¶35.) The result is that some of the forces are applied to the rigid structure rather than the seal, thereby elongating the life of the seal. (Ex. 1001 at 5, 4:38-40; Ex.1021 ¶35.)

Even if one accepts the structure identified as the disclosed structure by Maschio, the proposed combination is either identical to or equivalent to that structure. The modified Amazone structure would include Fiorido's bearings 28 in a race supported by the center of the movable portion of the Amazone housing acting as a seat. (Ex.1021 ¶36.) Fiorido's shaft would be seated in the bearing race, and the drive disk with dowel and pin would interact with the sowing disc. This proposed modification provides identical structure to that identified by Maschio as the disclosed structure. Even if it weren't identical, the exact same logic applied immediately above under the function-way-result test applies here as well, and the structure would at least be equivalent to the disclosed structure.

C. Maschio Has Failed to Establish Objective Indicia of Nonobviousness.

1. No Evidence of Copying Exists.

Maschio asserts that Precision copied the claims of the '121 patent during prosecution of its own patents. But Maschio's evidence fundamentally fails to show copying of the *invention* of the type recognized as a species of objective indicia of non-obviousness. Indeed, copying of claims is classic evidence of a belief in priority to the claimed invention, not that it was copied.

What Maschio fails to establish is how U.S. Provisional Application No. 61/466,047, the earliest priority document in the chain that included claim copying (*see* Ex.2013 at 47), could have been a copy of any work done by Maschio. Indeed, it cannot have been, because the earliest publication of the Italian priority document from which the '121 patent arises was January 24, 2013 (*see* Ex.1001 at 1, INID code 65)—almost two years *after* the filing of App. No. 61/466,047 and one year *after* the filing of the PCT application that would mature into Precision's three patent applications. (Ex.2024 at 6; Ex.2013 at 52, 84, 16, INID codes 60, 63.)

Because Precision had no access in any form to Maschio's priority documents, Precision cannot have copied its patent applications from Maschio. Moreover, Maschio has never commercialized a product that embodied the inventions of the '121 patent. (Ex.2025 at 10, Tr.41:5–16.) Thus, Maschio has failed to show that copying could have occurred; indeed, its research-and-development manager testified he knows of no company having copied the developments of the '121 patent. (*Id.* at 7, 11, Tr.26:10–27:15, 59:2–7.)

Finally, Precision's claims in commercial literature that its seed meters are interchangeable with Maschio's say nothing about the internal structure of the seed meters. Maschio's expert admitted as much and expressly disclaimed any notion that this commercial claim by Petitioner suggests copying. (Ex.1023 at 147:21–149:21.)

2. Maschio Has Failed to Establish Long-Felt Need or Failure by Others.

Maschio argues there was a long-felt need for the invention because in prior art meters:

- (1) the attachment system for the disc must be removed during replacement of the disc, consequently lengthening the replacement operation; and
- (2) the opening of the housing necessarily involves the removal of the portion containing the seed collection chamber from the hopper type store located above.

Paper 17 at 50–51. This argument assumes that having the vacuum on the movable portion of the housing was unknown, as both “needs” relate solely to locating the vacuum on the fixed portion. But Amazone had already put the vacuum on the movable portion of the housing. (Ex.1011 at 53, Fig.40; Ex.1003 ¶111.) Thus, there is no nexus between the alleged advance and solving the “long-felt need,” which had already been solved by Amazone. *See ClassCo, Inc. v. Apple, Inc.*, 838 F.3d 1214, 1220 (Fed. Cir. 2016) (nexus does not exist where merits of claimed invention were readily available in the prior art). The fact that Maschio never commercialized the invention of the '121 patent also belies any claim that it met a long-felt need. (Ex.2025 at 10, Tr.41:5–16.)

Likewise, the claim of failure by others rings hollow. The interrogatory answers cited by Maschio demonstrate that the accused “vSet Classic was

Precision's first vacuum seed meter." Thus, in its very first effort to develop a seed meter from scratch, it arrived at its design starting in "the fourth quarter of 2009" with a "prototype . . . in the field for beta testing in or around the second quarter of 2010." (Ex.2019 at 3.) Thus, the evidence establishes that when Precision first turned its attention to solving the problems of pneumatic seed meters, its design was completed in very short order. That demonstrates the opposite of a "long-felt need."

IV. Conclusion

For at least the reasons set forth above and in Precision's Petition, Precision respectfully requests that the Board find claims 1–5, 7–14, and 16 of the '121 patent not patentable.

Dated: October 11, 2024

Respectfully submitted,

/s/ **Scott R. Brown**

Scott R. Brown (Reg. No. 40,535)

sbrown@hoveywilliams.com

Matthew B. Walters (Reg. No. 65,343)

mwalters@hoveywilliams.com

HOVEY WILLIAMS LLP

10801 Mastin Blvd., Suite 1000

Overland Park, Kansas 66210

Telephone: 913.647.9050

Fax: 913.647.9057

Counsel for Petitioner

Precision Planting, LLC

Certificate of Word Count Compliance

Pursuant to 37 C.F.R. § 42.24(d), the undersigned certifies that this **Petitioner's Reply** complies with the type-volume limits of 37 C.F.R. § 42.24(c)(1) as modified by the Board's order of October 2, 2024 (Ex.3002) because it contains 6,928 words, according to the word-processing system used to prepare this paper, excluding the words in the Table of Contents, Table of Authorities, Certification Under § 42.24(d), and Certificate of Service, as set forth in 37 C.F.R. § 42.24(c).

Dated: October 11, 2024

/s/ **Scott R. Brown**

Scott R. Brown (Reg. No. 40,535)

sbrown@hoveywilliams.com

Matthew B. Walters (Reg. No. 65,343)

mwalters@hoveywilliams.com

HOVEY WILLIAMS LLP

10801 Mastin Blvd., Suite 1000

Overland Park, Kansas 66210

Telephone: 913.647.9050

Fax: 913.647.9057

Counsel for Petitioner

Precision Planting, LLC

Certificate of Service

Pursuant to 37 C.F.R. § 42.6(e), I certify that on October 11, 2024, a true and correct copy of **Petitioner's Reply** was served by electronic mail on Maschio's lead and backup counsel at the following email addresses:

Kevin R. Casey
Ashley E. Shapiro

kcasey@stradley.com
ashapiro@stradley.com

/s/ **Scott R. Brown**

Scott R. Brown (Reg. No. 40,535)
sbrown@hoveywilliams.com
Matthew B. Walters (Reg. No. 65,343)
mwalters@hoveywilliams.com
HOVEY WILLIAMS LLP
10801 Mastin Blvd., Suite 1000
Overland Park, Kansas 66210
Telephone: 913.647.9050
Fax: 913.647.9057

Counsel for Petitioner
Precision Planting, LLC