

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Chongqing Yanmei Technology Co., LTD,
Petitioner,

v.

Terves, LLC,
Patent Owner.

IPR2023-00521
U.S. Patent No. 10,689,740

PATENT OWNER'S CONTINGENT
MOTION TO AMEND UNDER 37 C.F.R. § 42.121

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EXHIBIT LIST

Exhibit	Description
2001	Declaration of Mark Cohen
2002	Cohen Resume
2003	EO13817
2004	EO13953
2005	EO14017
2006	Komesaroff, Make the Foreign Serve China
2007	Declaration of Andrew Sherman
2008	Disclaimer in Patent under 37 CFR 1.321(a)
2009	Electronic Acknowledgement Receipt of Ex. 2008.
2010	<i>Terves, LLC v. Yueyang Aerospace New Materials Co. Ltd. et al.</i> , Case No. 1:19-cv-1611 (N.D. Oh.), ECF 134, Terves Motion for Summary Judgment
2011	<i>Terves, LLC v. Yueyang Aerospace New Materials Co. Ltd. et al.</i> , Case No. 1:19-cv-1611 (N.D. Oh.), ECF 134-21, Ecometal Invalidity Contentions
2012	<i>Terves, LLC v. Yueyang Aerospace New Materials Co. Ltd. et al.</i> , Case No. 1:19-cv-1611 (N.D. Oh.), ECF 144, Defendants Response to Motion for Summary Judgment
2013	<i>Terves, LLC v. Yueyang Aerospace New Materials Co. Ltd. et al.</i> , Case No. 1:19-cv-1611 (N.D. Oh.), ECF 178, Summary Judgement Order
2014	<i>Terves, LLC v. Yueyang Aerospace New Materials Co. Ltd. et al.</i> , Case No. 1:19-cv-1611 (N.D. Oh.), ECF 203, Judgment.
2015	<i>Terves, LLC v. Yueyang Aerospace New Materials Co. Ltd. et al.</i> , Case No. 1:19-cv-1611 (N.D. Oh.), ECF 219, Permanent Injunction Memorandum Opinion
2016	<i>Terves, LLC v. Yueyang Aerospace New Materials Co. Ltd. et al.</i> , Case No. 1:19-cv-1611 (N.D. Oh.), ECF 220, Permanent Injunction
2017	Medlin Declaration during Reexamination
2018	Swanger Declaration during Reexamination
2019	Redline from '653 patent to '740 patent
2020	Application Data Sheet for '740 patent
2021	Specification for '740 patent
2022	IDS for '740 patent
2023	IDS signed for '740 patent

Exhibit	Description
2024	IDS signed (second time) for '740 patent
2025	First Amendment for Ex Parte Reexamination
2026	'740 patent application as originally filed
2027	'838 Doud patent application as originally filed
2028	'838 Doud provisional application as originally filed

I. INTRODUCTION

Pursuant to 37 C.F.R. § 42.121, (35 U.S.C. § 316(a)(9)), Patent Owner Terves, LLC, (“Terves”) submits this contingent Motion to Amend (“MTA”) for the above-captioned *inter partes* Review (“IPR”) in order to substitute claims 19-30, 32-49, 51-61, 63-81 of United States Patent No. 10,689,740 (“the ‘740 patent”) with proposed substitute claims 104-163.

Terves notified the Board of the Patent Owner’s intention to file this MTA and requested to confer with the Board on November 8, 2023 by email, and the Board responded on November 9, 2023 that Terves had satisfied its requirement to confer with the Board and to proceed in accordance with the law and USPTO regulations. *See* 37 C.F.R. § 42.121(a). This MTA is timely filed. *See* 37 C.F.R. § 42.121(a)(1).

II. STATEMENT OF RELIEF REQUESTED

The ‘740 patent, as issued, consists of claims 1-103. Claims 82-103 were not challenged by the Petitioner and are not part of the IPR. Since Terves previously disclaimed claims 1-18 and 62 of the ‘740 patent; only claims 19-61 and 63-81 of the ‘740 patent remain at issue.

Terves maintains that challenged claims are patentable as originally issued, but provides the proposed substitute claims to streamline and expedite the proceeding. If the Board finds the proposed substitute claims to be patentable,

Terves requests that the Board grant entry of proposed substitute claims 104-163 to replace original claims 19-30, 32-49, 51-61, 63-81. (*See* Appx. A and Table 1). Alternatively, should the Board not enter the proposed substitute claims, Terves submits that at least original claims 76-81 remain patentable.

There are no proposed amendments to claims that are currently or have previously been disclaimed, nor to claims that are not part of the IPR. Terves notes that the proposed substitute claims include cancellation of original claims 31 and 50 in view of the proposed amendments and that these claims 31 and 50 do not have a corresponding proposed substitute claim. Terves notes that original claims 27-28, 35-49, 51-57, and 64-81 corresponding to proposed substitute claims 112-113, 119-140, and 146-163 are only amended for dependency and are otherwise the same in all respects to original claims.

The proposed substitute claims are offered on a contingent basis, and should only be entered if the proposed substitute claims are deemed patentable. The below Table 1 indicates the substitute claims that Terves proposes:

Original '740 Patent Claim	Proposed Substitute Claim
Claim 19	Claim 104
Claim 20	Claim 105
Claim 21	Claim 106
Claim 22	Claim 107
Claim 23	Claim 108

Claim 24	Claim 109
Claim 25	Claim 110
Claim 26	Claim 111
Claims 27-28	Claims 112-113 ¹
Claim 29	Claim 114
Claim 30	Claim 115
Claim 32	Claim 116
Claim 33	Claim 117
Claim 34	Claim 118
Claims 35-49, 51-57	Claims 119-140 ²
Claim 58	Claim 141
Claim 59	Claim 142
Claim 60	Claim 143
Claim 61	Claim 144
Claim 63	Claim 145
Claims 64-81	Claims 146-163 ³

The proposed substitute claims have explicit written description support for all limitations in the originally filed application for the '740 patent and in the earlier filed disclosures for which each claim seeks the benefit of the earlier filing date, i.e., U.S. Patent No. 9,903,010 having a U.S. Pub. No. 2015/0299838, and an associated provisional application U.S. Provisional No. 61 / 981,425, (“Doud”) and

¹ Claims 112-113 are only amended for dependency and are otherwise the same in all respects to claims 27-28.

² Claims 119-140 are only amended for dependency and are otherwise the same in all respects to claims 35-49, 51-57.

³ Claims 146-163 are only amended for dependency and are otherwise the same in all respects to claims 64-81.

U.S. Patent No. 10,329,653 (“the ‘653 patent”).

III. LEGAL STANDARDS

Under *Lectrosonics, Inc. v. Zaxcom, Inc.*, Case IPR2018-01129 (Paper 15) (PTAB Feb. 25, 2019) (*precedential*), “a patent owner does not bear the burden of persuasion to demonstrate the patentability of substitute claims presented in a motion to amend.” *Id.* at 4. Instead, “the burden of persuasion ordinarily will lie with the petitioner to show that any proposed substitute claims are unpatentable by a preponderance of the evidence.” *Id.* Accordingly, Terves’ burden is to demonstrate “whether the motion to amend meets the statutory and regulatory requirements set forth in 35 U.S.C. § 316(d) and 37 C.F.R. § 42.121.” *Id.* At that point, it is Petitioner’s burden to show the unpatentability of the proposed claims.

IV. CLAIM LISTING

The ‘740 patent currently contains claims 1-103, of which claims 19-61 and 63-81 of the ‘740 patent remain at issue in the proceeding. Terves’ claim listing is attached as Appendix A.

Terves proposes to substitute claims 19-30, 32-49, 51-61, 63-81 with substitute claims 104-163. Terves notes that the proposed substitute claims include cancellation of original claims 31 and 50 in view of the proposed amendments and that these claims 31 and 50 do not have a corresponding proposed substitute claim. Terves notes that original claims 27-28, 35-49, 51-57, and 64-81 corresponding to

proposed substitute claims 112-113, 119-140, and 146-163 are only amended for dependency and are otherwise the same in all respects to original claims.

The substitute claims have: (1) underlining indicating inserted text, and (2) brackets indicating deleted text. *Toyota Motor Corp. v. American Vehicular Sciences LLC*, IPR2013-00422, Paper No. 25 at pp. 23 (PTAB March 7, 2015).

Proposed substitute claim 104, would replace claim 19 if the substitute claims are found to be patentable, and is amended to recite each of copper and nickel “constitutes [at least 0.01] 0.05-35 wt. % of said dissolvable magnesium cast composite” and cobalt “constitutes [at least 0.01] 0.05-20 wt. % of said dissolvable magnesium cast composite.” Proposed substitute claim 104 is further amended to recite “said dissolvable magnesium cast composite includes in situ galvanically-active intermetallic precipitate to enable controlled dissolution of the magnesium alloy, said in situ galvanically-active intermetallic precipitate includes said additive material” and “said magnesium composite has a dissolution rate of [at least] 5-300 mg/cm²/hr. in 3 wt. % KCl water mixture at 90° C.”

Proposed substitute claim 105, would replace claim 20 if the substitute claims are found to be patentable, and is amended to recite “wherein said magnesium composite includes at least 85 wt. % magnesium; said additive material includes one or both of said nickel and said copper.”

Proposed substitute claims 106 and 107, would replace claims 21 and 22 if

the substitute claims are found to be patentable, and both are amended to individually recite “wherein said magnesium composite has a dissolution rate of [at least] 40 mg/cm²/hr.”

Proposed substitute claims 108-111, would replace claims 23-26 if the substitute claims are found to be patentable, and each are amended to individually recite “wherein said magnesium composite includes [no more than] 0.5-10 wt. % aluminum.”

Proposed substitute claims 114-118, would replace claims 29, 30, and 32-34 if the substitute claims are found to be patentable, and each are amended to individually recite “wherein said dissolvable magnesium cast composite has a dissolution rate of one of a) 40 [-325] mg/cm²/hr. in 3 wt. % KCl water mixture at 90° C, b) 45 mg/cm²/hr. in 3 wt. % KCl water mixture at 90° C, c) 50 mg/cm²/hr. in 3 wt. % KCl water mixture at 90° C, d) 75 mg/cm²/hr. in 3 wt. % KCl water mixture at 90° C, e) 84 mg/cm²/hr. in 3 wt. % KCl water mixture at 90° C, f) 100 mg/cm²/hr. in 3 wt. % KCl water mixture at 90° C or g) 110 mg/cm²/hr. in 3 wt. % KCl water mixture at 90° C.”

Proposed substitute claims 141-145, would replace claims 58-61 and 63 if the substitute claims are found to be patentable, and each are amended to individually recite “said copper constitutes [0.01-35] 15-35 wt. % of said dissolvable magnesium cast composite.”

Proposed substitute claims 112-113, 119-140, and 146-163, would replace claims 27-28, 35-49, 51-57, and 64-81 if the substitute claims are found to be patentable, and only are amended to renumber the dependencies.

Original claims 1-81 would be cancelled if the above proposed substitute claims are found to be patentable and are entered.

Original claims 82-103 were not challenged by the Petitioner and are not part of the IPR. There are no proposed amendments to this claims and these claims are not included in the claim listing for the sake of brevity.

V. THE SUBSTITUTE CLAIMS MEET THE REQUIREMENTS OF 37 C.F.R. §42.121

Under 35 U.S.C. § 316(d)(1)(B) and 37 C.F.R. § 42.121(a)(3), Terves must propose a reasonable number of substitute claims. “The presumption is that only one substitute claim would be needed to replace each challenged claim.” *See* 37 C.F.R. § 42.121(a)(3); *Lectrosonics* at 4. Terves proposes only one substitute claim per challenged claim, noting that original claims 31 and 50 do not have a corresponding proposed substitute claim but instead are cancelled and that the proposed substitute claims for original claims 27-28, 35-49, 51-57, and 64-81 are not substantive and are only amended for dependency. The remaining claims 19-26, 29, 30, 32-34, 58-61, and 63 include substantive amendments, but many of the amendments are similar or nearly identical.

VI. THE PROPOSED AMENDMENTS NARROW THE SCOPE OF THE ORIGINAL CLAIMS

Under 35 U.S.C. § 316(d)(3) and 37 C.F.R. § 42.121(a)(2)(ii), a motion to amend may not present substitute claims that enlarge the scope of the claims. “A substitute claim will meet the requirements of § 42.121(a)(2)(i) and (ii) if it narrows the scope of at least one claim of the patent, for example, the challenged claim it replaces, in a way that is responsive to a ground of unpatentability involved in the trial.” *Lectrosonics* at 6-7.

The proposed claim amendments retain all features of the original claims while adding the further limitations identified in Section IV, *supra*. As the *Lectrosonics* panel held, “a proposed substitute claim adding a novel and nonobvious feature or combination to avoid the prior art in an instituted ground of unpatentability will not enlarge the scope of the claims of the patent.” *Lectrosonics* at 7. The proposed claim amendments address the prior art of Xu and Xiao and provide support for priority to Doud. The proposed claim amendments are consistent with the scope and disclosure of Doud that both the Petitioner and the Board have stated, namely, reciting the upper limits of the wt. % for copper and nickel as 35 wt. % and cobalt as 20 wt. %. (Paper 14, 11 and Paper 2, 22-23.) The proposed claim amendments also recite the “galvanically-active intermetallic precipitate” consistent with the Board’s analysis of Xu and Xiao. (Paper 14, 23.)

The additional features in the proposed substitute claims do not enlarge the

claimed scope and this requirement is met.

VII. THE PROPOSED CLAIMS ARE SUPPORTED IN THE ORIGINAL DISCLOSURE

Under 35 U.S.C. § 316(d)(3) and 37 C.F.R. § 42.121(a)(2)(ii), substitute claims may not introduce new subject matter. A motion to amend will meet this requirement if it “set[s] forth written description support in the originally filed disclosure of the subject patent for each claim for which benefit of the filing date of the earlier filed disclosure is sought.” *Id.*

Pursuant to 37 C.F.R. § 42.121(b)(1), support for the language of claim of the proposed substitute claims can be found in the originally filed application of the ‘740 patent and in Doud, to which the ‘740 patent claims its earliest priority. Terves has provided exhibits 2026 and 2027, which correspond to the original filed specification, claims, and figures for the ‘740 patent and Doud respectively. Terves notes that the publication of Doud (U.S. Publication No. 2015/0299838) is substantively the same as the originally filed application and no amendments were entered before publication. Terves has also provided exhibit 2028, corresponding to the associated provisional application of Doud, which is substantively similar to the subsequent family filings. Since Petitioner cited to the publication of Doud in its Petition, Terves also cites to the publication for consistency. It is understood that the citations to the publication are effectively citations to the originally filed application. Terves has also provided citations to the provisional application.

The below Table 2 maps the specific disclosure from the '740 patent as originally filed, Doud, and the associated provisional to the proposed substitute claims 104-111, 114-118, and 141-145 corresponding to original claims 19-26, 29, 30, 32-34, 58-61, and 63. The proposed amendments are supported by at least the following:

Proposed Substitute Claims		Support from the '740 patent application as originally filed	Support from Doud as earliest claimed priority
104 (19)	A dissolvable magnesium cast composite comprising a mixture of magnesium or a magnesium alloy and an additive material, said additive material includes one or more metals selected from the group consisting of	Ex. 2026 at ¶¶ [0007]	Ex. 1005 at ¶¶ [0006] Ex. 2028 at 2, 13-29.
	a) copper wherein said copper constitutes [at least 0.01] <u>0.05-35</u> wt. % of said dissolvable magnesium cast composite	Ex. 2026 at ¶¶ [0097]; original claims 18, 20, 22, 28, 32, 34	Ex. 1005 at ¶¶ [0013], [0018], [0019]; original claims 18, 19, 27 Ex. 2028 at 4, 22-25; 5, 5-25; original claim 7.
	b) nickel wherein said nickel constitutes [at least 0.01] <u>0.05-35</u> wt. % of said dissolvable magnesium cast composite, and	Ex. 2026 at ¶¶ [0097]; original claims 18, 20, 22, 28, 32, 34	Ex. 1005 at ¶¶ [0012], [0018], [0019]; original claims 16, 17, 26 Ex. 2028 at 5, 5-25.
	c) cobalt wherein said cobalt constitutes [at least 0.01] <u>0.05-20</u> wt. %	Ex. 2026 at original claims 18, 20, 22, 28, 32, 34	Ex. 1005 at ¶¶ [0018], [0019]; original claims 20,

Proposed Substitute Claims		Support from the '740 patent application as originally filed	Support from Doud as earliest claimed priority
	of said dissolvable magnesium cast composite,		21, 28 Ex. 2028 at 4, 26-29; 5, 5-25; original claim 8.
	said magnesium composite includes in situ precipitate, <u>said dissolvable magnesium cast composite includes in situ galvanically-active intermetallic precipitate to enable controlled dissolution of the magnesium alloy</u> , said in situ galvanically-active intermetallic precipitate includes said additive material,	Ex. 2026 at ¶¶ [0007]	Ex. 1005 at ¶¶ [0005], [0051]; original claims 32. Ex. 2028 at 11, 21-29; 12, 1-11.
	a plurality of particles of said in situ precipitate having a size of no more than 50 μm ,	Ex. 2026 at FIG. 1	Ex. 1005 at FIG. 1 Ex. 2028 at FIG. 1
	said magnesium composite has a dissolution rate of [at least] <u>5-300</u> $\text{mg}/\text{cm}^2/\text{hr}$. in 3 wt. % KCl water mixture at 90° C	Ex. 2026 at [0097]; original claim 31	Ex. 1005 at original claims 31 Ex. 2028 at 12, 12-29; 13, 1-18.
105 (20)	wherein said magnesium composite includes at least 85 wt. % magnesium; <u>said additive material includes one or both of said nickel and said copper.</u>	Ex. 2026 at ¶¶ [0007], [0050], [0055]	Ex. 1005 at ¶¶ [0006], [0033], [0035] Ex. 2028 at 8, 10-16; 8, 24-29.

Proposed Substitute Claims		Support from the '740 patent application as originally filed	Support from Doud as earliest claimed priority
106-107 (21-22)	wherein said magnesium composite has a dissolution rate of [at least] 40 mg/cm ² /hr. in 3 wt. % KCl water mixture at 90° C.	Ex. 2026 at ¶¶ [0090], [00144]	Ex. 1005 at ¶¶ [0047], [0058] Ex. 2028 at 11, 10-11; 13, 17-18.
108-111 (23-26)	wherein said magnesium composite includes [no more than] 0.5-10 wt. % aluminum.	Ex. 2026 at ¶¶ [0096], [0097], [0098]; original claims 13, 14, 27, 50, 51, 52, 54, 56	Ex. 1005 at ¶¶ [0021]; original claims 10, 11, 25 Ex. 2028 at 6, 7-9.
114-118 (29, 30, 32-34)	wherein said dissolvable magnesium cast composite has a dissolution rate of <u>one of</u> a) 40 [-325] mg/cm ² /hr. in 3 wt. % KCl water mixture at 90° C, b) 45 mg/cm ² /hr. in 3 wt. % KCl water mixture at 90° C, c) 50 mg/cm ² /hr. in 3 wt. % KCl water mixture at 90° C, d) 75 mg/cm ² /hr. in 3 wt. % KCl water mixture at 90° C, e) 84 mg/cm ² /hr. in 3 wt. % KCl water mixture at 90° C, f) 100 mg/cm ² /hr. in 3 wt. % KCl water mixture at 90° C or g) 110 mg/cm ² /hr. in 3 wt. % KCl water mixture at 90° C.	Ex. 2026 at ¶¶ [0088]-[0090]	Ex. 1005 at ¶¶ [0045]-[0047], [0053]-[0058] Ex. 2028 at 12, 13-29; 13, 1-18.

Proposed Substitute Claims		Support from the ‘740 patent application as originally filed	Support from Doud as earliest claimed priority
141-145 (58-61, 63)	wherein said additive material includes copper, said copper constitutes [0.01-35] <u>15-35</u> wt. % of said dissolvable magnesium cast composite.	Ex. 2026 at ¶¶ [0020]	Ex. 1005 at ¶¶ [0013] Ex. 2028 at 7, 17-20.

The proposed substitute claims 112-113, 119-140, and 146-163 corresponding to original claims 27-28, 35-49, 51-57, and 64-81 are only amended for dependency and are therefore only included in Appendix A for brevity. All of proposed substitute claims 104-163 are supported in both the ‘740 patent application as originally filed and in the original and earliest filing of Doud, and thus are entitled to the benefit of the earliest priority date of Doud.

Regarding written description support in Doud for these proposed substitute claims related to the question of priority, Petitioner does not argue that any limitations of these original claims are not found in Doud, but, in fact, admits and argues that Doud discloses these limitations. (Paper 2, 40-45). Petitioner only argues that there is no literal support in Doud for any values of copper, nickel, or cobalt over 35 wt. % as recited in original claim 19. (Paper 2, 22-24.) This argument has been addressed in this MTA by limiting the values of copper, nickel, or cobalt to an upper limit of 35 wt. % for copper and nickel and 20 wt. % for

cobalt, which is undoubtedly supported in Doud and renders Petitioner's only arguments for Doud moot. The proposed amendments are also consistent with the Board's position that a POSITA "reviewing the priority disclosures of the parent and grandparent applications would understand that the upper boundary of copper and nickel in these applications is 35 wt. % and the upper boundary of cobalt is 20 wt. %." (Paper 14, 11.)

Since this is the only argument presented for lack of written description by the Petitioner and Terves has proposed responsive amendments to this argument, it follows that all repeating limitations in claims 104-163 from the original claims have written description support in Doud and are entitled the priority of Doud. All substantive amendments and all resulting claims 104-163 are supported in Doud and are entitled the priority of Doud, see Table 2.

VIII. THE PROPOSED CLAIMS RESPOND TO A GROUND OF UNPATENTABILITY

Under 37 C.F.R. § 42.121(a)(2)(i), "[a] motion to amend may be denied where . . . [t]he amendment does not respond to a ground of unpatentability involved in the trial." Here, the Board instituted trial with respect to all grounds set forth in the Petition. (Paper 14, 31.) The proposed substitute claims overcome each ground because they undoubtedly find written description support in Doud, thereby securing priority to Doud and negating Doud as prior art, and further define a claim scope that would not have been obvious over Xu or Xiao in view of Xu and do not

broaden the scope of the issued claims. 37 C.F.R. §42.121(a)(2).

Proposed substitute claim 104 (original claim 19) narrows the wt. % ranges for the additive materials of copper, nickel, and cobalt to an upper limit of 35 wt. % for copper and nickel and 20 wt. % for cobalt. Proposed substitute claim 104 (original claim 19) also recites that the dissolvable magnesium cast composite includes in situ galvanically-active intermetallic precipitate to enable controlled dissolution of the magnesium alloy and narrows the dissolution rate. Proposed substitute claims 105-111, 114-118, and 141-145 include additional amendments as set forth in Table 2, *supra*, and proposed substitute claims 112-113, 119-140, and 146-163 are amended only for dependencies and included in Appendix A.

As set forth herein, the proposed substitute claims are clearly supported in Doud, thereby securing priority to Doud and negating Doud as prior art. The proposed substitute claims are intended to directly align with both the Petitioner's and the Board's position on the wt. % ranges disclosed in Doud to expedite this proceeding, namely, reciting the upper limits of the wt. % for copper and nickel as 35 wt. % and cobalt as 20 wt. %. (Paper 2, 22-24 and 40-45; Paper 14, 11.) Moreover, the prior art of Xu or Xiao in view of Xu do not disclose, teach, or suggest several aspects of the claimed dissolvable magnesium cast composite, each of which alone would constitute a basis for patentability. Further, the combinations of each of the aspects are not taught in the art. The proposed substitute claims are

also intended to further bolster Terves' prior arguments that the Board highlighted by reciting the "galvanically-active intermetallic precipitate." Therefore, the proposed substitute claims are patentable.

IX. THE PERSON OF ORDINARY SKILL IN THE ART

Terves applies the same definition of a person having ordinary skill in the art ("POSITA") as proposed by Petitioner in its petition. (Paper 2, 13.)

X. CLAIM CONSTRUCTION

Terves does not propose any terms for construction. Petitioner proposed claim constructions for "in situ precipitate" and "a plurality of particles of said in situ precipitate having a size of no more than 50 μm ..." recited in original claim 19. (Paper 2, 11-12.) Terves submits that claim construction of these terms is moot because, for Doud, Petitioner does not argue that either limitation falls outside the written disclosure of Doud but, in fact, admits and argues that Doud discloses these limitations. (Paper 2, 40). Since these and all other limitations of the claims are disclosed in Doud, Doud serves as priority to the '740 patent and cannot be used to anticipate these limitations, see Table 2, *supra*. For Xu and Xiao, as argued, a person having ordinary skill in the art would not have been led to combine and modify Xu and Xiao to provide a magnesium cast composite using particles sizes disclosed in a reference directed to sintered magnesium powder composites. (Paper 14, 24-25). As a result, claim construction is not necessary at this time.

Petitioner proposed claim constructions for the Markush groups recited in claims in original claims 76-81, namely “wherein said additive material includes one or more metal materials selected from the group consisting of 0.1-35 wt.% copper, 0.1-24.5 wt.% nickel and 0.1-20 wt. % cobalt.” (Paper 2, 13.) Petitioner did not make any specific lack of written description arguments with respect to dependent claims 76–81, apart from its arguments based on claim 19. (Paper 2, 22–24.) As indicated by the Board, “[a]s there appears to be no dispute that Doud provides written description support for the recited levels of copper, nickel, and cobalt in claims 76–81 ..., we do not apply Doud as prior art to claims 76–81.” (Paper 14, 15.) For Xu and Xiao, since proposed claim 104 is patentable over the cited references the claims reciting these limitations depend from claim 104, the dependent claims are also patentable for at least this reason. As a result, claim construction is not necessary at this time.

XI. THE CLAIMS ARE PATENTABLE OVER THE PRIOR ART

A. The Claims are not Anticipated by Doud

Petitioner asserts that the ‘740 patent is not entitled to the benefit of its earliest claimed priority: Doud. Petitioner only argues that a single limitation of original claim 19 does not find written description support in Doud, namely, any values of copper, nickel, or cobalt over 35 wt. %. (Paper 2, 22-24.) Petitioner does not argue that any other limitations in claim 19 or dependent claims lack written

description support in Doud. (*See also* Paper 14, 10.) In fact, Petitioner argues that Doud discloses each of the other limitations in claim 19 and in the dependent claims in its anticipation analysis. (Paper 2, 38-45.)

Proposed substitute claim 104 replacing original claim 19 is intended to directly address and remedy Petitioner's argument regarding the 35% upper boundary. Indeed, the amendments to claim 19 recite, in part: wherein said copper and nickel constitutes 0.05-35 wt. % of said dissolvable magnesium cast composite and cobalt constitutes 0.05-20 wt. % of said dissolvable magnesium cast composite. This amendment is fully supported in the original application as filed for the '740 patent and in the original priority application as filed for Doud, see Table 2, *supra*. Moreover, the Petitioner itself also admitted that it is only values over 35 wt. % that are (allegedly) not supported in Doud, an argument that is now moot, and conveniently listed Doud as disclosing copper ranges of 0.05-35 wt. %, nickel ranges of 0.05-35 wt. %, and cobalt ranges of ranges of 0.05-20 wt. %. (Paper 2, 22, 23, 24.)

See Petitioner's argument for copper:

The petitioner submits that the open top end of the range for copper does not find written description support in the disclosure of the '653 patent. The '653 patent provides for various ranges of copper. ***In the '653 patent copper ranges of 0.05-35 wt. %, 0.01-5 wt. %, about 0.5-15 wt. %, 15-35 wt.% and 0.01-20 wt. % are disclosed.*** See '653 patent col. 5 lines 15-25.

(Emphasis added; Paper 2, 22.)

See Petitioner's argument for nickel:

The petitioner submits that the open top end of the range for nickel does not find written description support in the disclosure of the '653 patent. The '653 patent provides for various ranges of nickel. *In the '653 patent nickel ranges of 0.05-35 wt. %, 0.05-23.5 wt. %, 0.01-5 wt. %, 3-7 wt. %, 7-10 wt. %, and 10-24.5 wt % **are disclosed**.* See '653 patent col. 4 lines 58-65.

(Emphasis added; Paper 2, 23.)

See Petitioner's argument for cobalt:

The '653 patent provides for various ranges of cobalt. *In the '653 patent cobalt ranges of 0.05-20% by weight or cobalt as secondary metal (SM) in an amount of 0.5-35% by weight **are disclosed**.* See '653 patent col. 5 lines 40-42, col. 6 lines 15-17, and col. 8 lines 27-28.

(Emphasis added; Paper 2, 24.)

Petitioner's Declarant also came to the same conclusion, finding that only "to the extent that claim 19 covers embodiments of a magnesium composite where the copper, nickel, or cobalt are present in amounts over 35 weight %, these embodiments are not disclosed in the disclosure of the '653 patent." (Emphasis added, Ex. 1016, 17.) The natural corollary to this statement is that for embodiments of a magnesium composite where the copper, nickel, or cobalt are present in amounts up to 35 weight % (or up to 20 weight % for cobalt), then these embodiments are disclosed in the disclosure of the '653 patent (and Doud).

Proposed substitute claim 104 is amended to recite, in part, precisely these limitations of a 0.05-35 wt. % range for each of copper and nickel, and a 0.05-20

wt. % range for cobalt. As a result, this claim 104 is fully supported in Doud and is entitled to the benefit of the priority date of Doud. As described, Petitioner does not argue that any of the dependent claims or any of the other limitations in the independent claim lack written description support in Doud, thus the dependent claims and other limitations in the original claims are fully supported in Doud and are entitled to the benefit of the priority date of Doud, see also Section VII, *supra*.

Doud therefore, is not prior art and cannot be relied on for anticipation for any of proposed substitute claims 104-163. In view of the foregoing, claims 104 and its dependents are entitled to the benefit of the priority of Doud and are patentable.

B. The Claims Are Patentable Over Xu and Xiao in view of Xu

Petitioner argues that Xu reads on original claim 19 in disclosing a magnesium alloy. (Paper 2, 55.) Xu, however, merely discloses a powder compact metal composite having a cellular nanomatrix and a metal matrix. Ex. 1007 at ¶ 31. The composite is formed from a combination of powder constituents. *Id.* at ¶ 41. “These powder constituents can be selected and configured *for compaction and sintering* [*not* melting a cast] to provide the metal composite.” *Id.* Furthermore, “when compacted and sintered” the metal nanomatrix forms a “cellular nanomatrix” coating material disposed on the metal matrix powder. *Id.* at ¶ 49. The term “cellular nanomatrix” describes “the extensive, regular, continuous and

interconnected nature of the distribution of nanomatrix material” within the metal composite. *Id.* at ¶ 44.

Original claim 19 (and proposed substitute claim 104), however, repeatedly recite a “dissolvable magnesium *cast* composite.” In fact, original claim 19 recites that cast limitation *four* times. Moreover, proposed substitute claim 104 is further amended to recite, in part, said dissolvable magnesium cast composite includes in situ galvanically-active intermetallic precipitate to enable controlled dissolution of the magnesium alloy. The amendment is supported in the original ‘740 patent application as filed, see Table 2, *supra*. The amendment is also responsive to the Board’s position that the claims did not recite this limitation. (Paper 14, 3.)

Because Xu teaches a POSITA that to compact and sinter the powder to form that cellular nanomatrix, *it teaches a POSITA against a cast composite*: “[m]oreover, metal alloys (formed by, e.g., casting from a melt or formed by metallurgically processing a powder) without the cellular nanomatrix also do not have the selectively tailorable material and chemical as the metal composites herein.” *Id.* at 59. The Board agreed, stating that “Patent Owner appears to have a strong argument that Xu does not in fact teach or suggest a “cast composite” containing the constituents recited in claim 19.” (Paper 14, 20.)

Incredibly, Petitioner’s analysis of claim 19 does *not* cite to ¶59 of Xu which teaches a POSITA not to cast from a melt. (Paper 2, 55-56.) Instead, Petitioner

makes the improperly biased and empty “routine experimentation” attorney argument without any scientific or engineering explanation or evidence that a POSITA would have tried to form a composite by casting from a melt, when Xu and his fellow inventors explicitly stated it would not work. *Id.* at 46-47. Because Xu explicitly stated that forming a composite by casting a melt will “not have the selectively tailorable material and chemical properties as the metal composites herein,” and because Petitioner ignored that evidence to baselessly argue the contrary, Petitioner’s obviousness argument based on Xu fails.

Therefore, because Xu teaches a POSITA a powder configured for compaction and sintering to form a desirable cellular nanomatrix that has “selectively tailorable material and chemical properties as the metal composites herein”, Xu teaches away from the magnesium cast composite in claim 104 and its dependents. Xu also only discloses temperatures that are much higher than 90° C and a broad dissolution rate range that is completely dependent on the composite, the dissolving agent used, and the temperature. As such, it would not have been obvious to a POSITA to apply the teachings of Xu to form the cast composite recited in claim 104 and its dependents.

The Board appeared to agree with these arguments and others, raising significant questions “as to whether one of ordinary skill in the art looking to form a magnesium cast composite would look to the disclosures of Xu, which

specifically differentiates the properties of its compacted powder products from cast magnesium composites that lack a nanomatrix” and “as to whether one of ordinary skill in the art would have understood from the various broad ranges disclosed in Xu that any particular composite of Xu could achieve the claimed dissolution rate in 3 wt. % KCl brine at 90° C.” (Paper 14, 20.)

Furthermore, Xiao does not remedy the deficiencies of Xu. In reexamination, the USPTO already determined that Xiao does not disclose in situ precipitates formed from copper, nickel, and/or cobalt:

Xiao is the closest prior art and it fails to teach a magnesium alloy that includes in situ galvanically-active intermetallic phases or intermetallic particles to enable controlled dissolution of the magnesium alloy as claimed. The phases of Xiao taught to be involved in galvanic activity contain aluminum instead of the secondary/additive materials required by the claims. There is no suggestion from Xiao [sic] to substitute copper, nickel, iron, or cobalt for the aluminum in the galvanically-active intermetallic.

Ex. 1009, 4.

Xiao teaches away from galvanically-active in situ precipitates and does not teach galvanically-active phases or intermetallic particles. Ex. 2018 ¶37. As discussed, Xu teaches away from a cast composite. Therefore Xiao and Xu should be precluded from rendering claim 104 obvious, and the combination of Xiao and Xu cannot teach the dissolvable magnesium cast composite of claim 104. In regard to the notice of allowance, the Board stated that “[t]he Examiner’s reasons for allowance appear to be focused instead on whether copper, nickel, or cobalt are

used in Xiao to form a galvanically-active intermetallic that enables controlled dissolution of the magnesium alloy—a requirement not found in independent claim 19 of the '740 patent” (Paper 14, 24.) As described, proposed substitute claim 104 is specifically amended to recite in part, said dissolvable magnesium cast composite includes in situ galvanically-active intermetallic precipitate to enable controlled dissolution of the magnesium alloy.

Moreover, a POSITA would not have been led to combine aspects of Xiao with Xu when Xu fundamentally teaches against a cast composite. The Board indicated, “we agree with Patent Owner that there is a significant question as to why one of ordinary skill in the art seeking to form a magnesium cast composite would have looked to particle sizes in a reference directed to sintered magnesium powder composites.” (Paper 14, 24-25.) Further, “This is especially pertinent because Xu appears to disclose that metal alloys formed by casting from a melt “do not have the selectively tailorable material and chemical properties” of the disclosed powder-based composites.” (Paper 14, 25.)

In view of the foregoing, claims 104 and its dependents are patentable over Xu and Xiao and Xu. A POSITA would not have been led to modify the disclosures to provide the claimed dissolvable magnesium cast composite.

C. Duty of Candor and Other Prior Art Known to Terves

Terves submits that the closest material art is already of record and

discussed herein. Terves is unaware of any other reference that teaches or suggests the dissolvable magnesium cast composite in the substitute claims.

XII. CONCLUSION

For the foregoing reasons, proposed substitute claims 104-163 are patentable.

Dated: November 22, 2023

Respectfully submitted,

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APPENDIX A – LIST OF PROPOSED SUBSTITUTE CLAIMS

Pursuant to 37 CFR § 1.121(c)(2), the use of brackets indicates deleted text and underlining indicates inserted text.

1-81. Cancelled.

82-103. Not part of IPR.

104. (Proposed Substitute for Claim 19) A dissolvable magnesium cast composite comprising a mixture of magnesium or a magnesium alloy and an additive material, said additive material includes one or more metals selected from the group consisting of a) copper wherein said copper constitutes [at least 0.01] 0.05-35 wt. % of said dissolvable magnesium cast composite, b) nickel wherein said nickel constitutes [at least 0.01] 0.05-35 wt. % of said dissolvable magnesium cast composite, and c) cobalt wherein said cobalt constitutes [at least 0.01] 0.05-20 wt. % of said dissolvable magnesium cast composite, said magnesium composite includes in situ precipitate, said dissolvable magnesium cast composite includes in situ galvanically-active intermetallic precipitate to enable controlled dissolution of the magnesium alloy, said in situ galvanically-active intermetallic precipitate includes said additive material, a plurality of particles of said in situ precipitate having a size of no more than 50 μm , said magnesium composite has a dissolution rate of [at least] 5-300 $\text{mg}/\text{cm}^2/\text{hr.}$ in 3 wt. % KCl water mixture at 90° C.

105. (Proposed Substitute for Claim 20) The dissolvable magnesium cast composite as defined in claim [19]104, wherein said magnesium composite includes at least 85 wt. % magnesium; said additive material includes one or both of said nickel and said copper.

106. (Proposed Substitute for Claim 21) The dissolvable magnesium cast composite as defined in claim [19]104, wherein said magnesium composite has a dissolution rate of [at least] 40 mg/cm²/hr. in 3 wt. % KCl water mixture at 90° C.

107. (Proposed Substitute for Claim 22) The dissolvable magnesium cast composite as defined in claim [20]105, wherein said magnesium composite has a dissolution rate of [at least] 40 mg/cm²/hr. in 3 wt. % KCl water mixture at 90° C.

108. (Proposed Substitute for Claim 23) The dissolvable magnesium cast composite as defined in claim [19]104, wherein said magnesium composite includes [no more than] 0.5-10 wt. % aluminum.

109. (Proposed Substitute for Claim 24) The dissolvable magnesium cast composite as defined in claim [20]105, wherein said magnesium composite includes [no more than] 0.5-10 wt. % aluminum.

110. (Proposed Substitute for Claim 25) The dissolvable magnesium cast composite as defined in claim [21]106, wherein said magnesium composite includes [no more than] 0.5-10 wt. % aluminum.

111. (Proposed Substitute for Claim 26) The dissolvable magnesium cast composite as defined in claim [22]107, wherein said magnesium composite includes [no more than] 0.5-10 wt. % aluminum.

112. (Proposed Substitute for Claim 27) The dissolvable magnesium cast composite as defined in claim [23]108, wherein said magnesium composite includes at least 50 wt. % magnesium.

113. (Proposed Substitute for Claim 28) The dissolvable magnesium cast composite as defined in claim [25]110, wherein said magnesium composite includes at least 50 wt. % magnesium.

114. (Proposed Substitute for Claim 29) The dissolvable magnesium cast composite as defined in claim [19]104, wherein said dissolvable magnesium cast composite has a dissolution rate of one of a) 40 [-325] mg/cm²/hr. in 3 wt. % KCl water mixture at 90° C, b) 45 mg/cm²/hr. in 3 wt. % KCl water mixture at 90° C, c) 50 mg/cm²/hr. in 3 wt. % KCl water mixture at 90° C, d) 75 mg/cm²/hr. in 3 wt. % KCl water mixture at 90° C, e) 84 mg/cm²/hr. in 3 wt. % KCl water mixture at 90° C, f) 100 mg/cm²/hr. in 3 wt. % KCl water mixture at 90° C or g) 110 mg/cm²/hr. in 3 wt. % KCl water mixture at 90° C.

115. (Proposed Substitute for Claim 30) The dissolvable magnesium cast composite as defined in claim [20]105, wherein said dissolvable magnesium cast composite has a dissolution rate of one of a) 40 [-325] mg/cm²/hr. in 3 wt. % KCl

water mixture at 90° C, b) 45 mg/cm²/hr. in 3 wt. % KCl water mixture at 90° C, c) 50 mg/cm²/hr. in 3 wt. % KCl water mixture at 90° C, d) 75 mg/cm²/hr. in 3 wt. % KCl water mixture at 90° C, e) 84 mg/cm²/hr. in 3 wt. % KCl water mixture at 90° C, f) 100 mg/cm²/hr. in 3 wt. % KCl water mixture at 90° C or g) 110 mg/cm²/hr. in 3 wt. % KCl water mixture at 90° C.

116. (Proposed Substitute for Claim 32) The dissolvable magnesium cast composite as defined in claim [23]108, wherein said dissolvable magnesium cast composite has a dissolution rate of one of a) 40 [-325] mg/cm²/hr. in 3 wt. % KCl water mixture at 90° C, b) 45 mg/cm²/hr. in 3 wt. % KCl water mixture at 90° C, c) 50 mg/cm²/hr. in 3 wt. % KCl water mixture at 90° C, d) 75 mg/cm²/hr. in 3 wt. % KCl water mixture at 90° C, e) 84 mg/cm²/hr. in 3 wt. % KCl water mixture at 90° C, f) 100 mg/cm²/hr. in 3 wt. % KCl water mixture at 90° C or g) 110 mg/cm²/hr. in 3 wt. % KCl water mixture at 90° C.

117. (Proposed Substitute for Claim 33) The dissolvable magnesium cast composite as defined in claim [27]112, wherein said dissolvable magnesium cast composite has a dissolution rate of one of a) 40 [-325] mg/cm²/hr. in 3 wt. % KCl water mixture at 90° C, b) 45 mg/cm²/hr. in 3 wt. % KCl water mixture at 90° C, c) 50 mg/cm²/hr. in 3 wt. % KCl water mixture at 90° C, d) 75 mg/cm²/hr. in 3 wt. % KCl water mixture at 90° C, e) 84 mg/cm²/hr. in 3 wt. % KCl water mixture at 90° C

C, f) 100 mg/cm²/hr. in 3 wt. % KCl water mixture at 90° C or g) 110 mg/cm²/hr. in 3 wt. % KCl water mixture at 90° C.

118. (Proposed Substitute for Claim 34) The dissolvable magnesium cast composite as defined in claim [28]113, wherein said dissolvable magnesium cast composite has a dissolution rate of one of a) 40 [-325] mg/cm²/hr. in 3 wt. % KCl water mixture at 90° C, b) 45 mg/cm²/hr. in 3 wt. % KCl water mixture at 90° C, c) 50 mg/cm²/hr. in 3 wt. % KCl water mixture at 90° C, d) 75 mg/cm²/hr. in 3 wt. % KCl water mixture at 90° C, e) 84 mg/cm²/hr. in 3 wt. % KCl water mixture at 90° C, f) 100 mg/cm²/hr. in 3 wt. % KCl water mixture at 90° C or g) 110 mg/cm²/hr. in 3 wt. % KCl water mixture at 90° C.

119. (Proposed Substitute for Claim 35) The dissolvable magnesium cast composite as defined in claim [27]112, wherein said magnesium alloy includes over 50 wt. % magnesium and one or more metals selected from the group consisting of aluminum, boron, bismuth, zinc, zirconium, and manganese.

120. (Proposed Substitute for Claim 36) The dissolvable magnesium cast composite as defined in claim [28]113, wherein said magnesium alloy includes over 50 wt. % magnesium and one or more metals selected from the group consisting of aluminum, boron, bismuth, zinc, zirconium, and manganese.

121. (Proposed Substitute for Claim 37) The dissolvable magnesium cast composite as defined in claim [27]112, wherein said magnesium alloy includes

over 50 wt. % magnesium and one or more metals selected from the group consisting of aluminum in an amount of 0.5-10 wt. %, zinc in an amount of 0.1- 6 wt. %, zirconium in an amount of 0.01- 3 wt. %, manganese in an amount of 0.15-2 wt. %, boron in an amount of 0.0002-0.04 wt. %, and bismuth in an amount of 0.4-0.7 wt. %.

122. (Proposed Substitute for Claim 38) The dissolvable magnesium cast composite as defined in claim [28]113, wherein said magnesium alloy includes over 50 wt. % magnesium and one or more metals selected from the group consisting of aluminum in an amount of 0.5-10 wt. %, zinc in an amount of 0.1-6 wt. %, zirconium in an amount of 0.01-3 wt. %, manganese in an amount of 0.15-2 wt. %, boron in an amount of 0.0002-0.04 wt. %, and bismuth in an amount of 0.4-0.7 wt. %.

123. (Proposed Substitute for Claim 39) The dissolvable magnesium cast composite as defined in claim [27]112, wherein said magnesium alloy includes over 50 wt. % magnesium and one or more metals selected from the group consisting of aluminum in an amount of 0.5-10 wt. %, zinc in an amount of 0.1-3 wt. %, zirconium in an amount of 0.01-1 wt. %, manganese in an amount of 0.15-2 wt. %, boron in an amount of 0.0002-0.04 wt. %, and bismuth in amount of 0.4-0.7 wt. %.

124. (Proposed Substitute for Claim 40) The dissolvable magnesium cast composite as defined in claim [28]113, wherein said magnesium alloy includes over 50 wt. % magnesium and one or more metals selected from the group consisting of aluminum in an amount of 0.5-10 wt. %, zinc in an amount of 0.1-3 wt. %, zirconium in an amount of 0.01-1 wt. %, manganese in an amount of 0.15-2 wt. %, boron in an amount of 0.0002-0.04 wt. %, and bismuth in amount of 0.4-0.7 wt. %.

125. (Proposed Substitute for Claim 41) The dissolvable magnesium cast composite as defined in claim [20]105, wherein said magnesium alloy includes at least 85 wt. % magnesium and one or more metals selected from the group consisting of 0.5-10 wt. % aluminum, 0.05-6 wt. % zinc, 0.01-3 wt. % zirconium, and 0.15-2 wt. % manganese.

126. (Proposed Substitute for Claim 42) The dissolvable magnesium cast composite as defined in claim [22]107, wherein said magnesium alloy includes at least 85 wt. % magnesium and one or more metals selected from the group consisting of 0.5-10 wt. % aluminum, 0.05-6 wt. % zinc, 0.01-3 wt. % zirconium, and 0.15-2 wt. % manganese.

127. (Proposed Substitute for Claim 43) The dissolvable magnesium cast composite as defined in claim [23]108, wherein said magnesium alloy includes at least 85 wt. % magnesium and one or more metals selected from the group

consisting of 0.5-10 wt. % aluminum, 0.05-6 wt. % zinc, 0.01-3 wt. % zirconium, and 0.15-2 wt. % manganese.

128. (Proposed Substitute for Claim 44) The dissolvable magnesium cast composite as defined in claim [27]112, wherein said magnesium alloy comprises greater than 50 wt. % magnesium and one or more metals selected from the group consisting of 0.5-10 wt. % aluminum, 0.1-2 wt. % zinc, 0.01-1 wt. % zirconium, and 0.15-2 wt. % manganese.

129. (Proposed Substitute for Claim 45) The dissolvable magnesium cast composite as defined in claim [28]113, wherein said magnesium alloy comprises greater than 50 wt. % magnesium and one or more metals selected from the group consisting of 0.5-10 wt. % aluminum, 0.1-2 wt. % zinc, 0.01-1 wt. % zirconium, and 0.15-2 wt. % manganese.

130. (Proposed Substitute for Claim 46) The dissolvable magnesium cast composite as defined in claim [27]112, wherein said magnesium alloy comprises greater than 50 wt. % magnesium and one or more metals selected from the group consisting of 0.1-3 wt. % zinc, 0.05-1 wt. % zirconium, 0.05-0.25 wt. % manganese, 0.0002-0.04 wt. % boron, and 0.4-0.7 wt. % bismuth.

131. (Proposed Substitute for Claim 47) The dissolvable magnesium cast composite as defined in claim [28]113, wherein said magnesium alloy comprises greater than 50 wt. % magnesium and one or more metals selected from the group

consisting of 0.1-3 wt. % zinc, 0.05-1 wt. % zirconium, 0.05-0.25 wt. % manganese, 0.0002-0.04 wt. % boron, and 0.4-0.7 wt. % bismuth.

132. (Proposed Substitute for Claim 48) The dissolvable magnesium cast composite as defined in claim [19]104, wherein said magnesium alloy comprises 60-95 wt. % magnesium, 0.5-10 wt. % aluminum, 0.05-6 wt. % zinc, and 0.15-2 wt. % manganese.

133. (Proposed Substitute for Claim 49) The dissolvable magnesium cast composite as defined in claim [19]104, wherein said magnesium alloy includes 60-95 wt. % magnesium and 0.01-1 wt. % zirconium.

134. (Proposed Substitute for Claim 51) The dissolvable magnesium cast composite as defined in claim [19]104, wherein said magnesium alloy includes over 50 wt. % magnesium and one or more metals selected from the group consisting of 0.1-3 wt. % zinc, 0.01-1 wt. % zirconium, 0.05-1 wt. % manganese, 0.0002-0.04 wt. % boron, and 0.4-0.7 wt. % bismuth.

135. (Proposed Substitute for Claim 52) The dissolvable magnesium cast composite as defined in claim [19]104, wherein said additive material includes nickel, said nickel constitutes 0.1-23.5 wt. % of said dissolvable magnesium cast composite.

136. (Proposed Substitute for Claim 53) The dissolvable magnesium cast composite as defined in claim [20]105, wherein said additive material includes

nickel, said nickel constitutes 0.1-23.5 wt. % of said dissolvable magnesium cast composite.

137. (Proposed Substitute for Claim 54) The dissolvable magnesium cast composite as defined in claim [22]107, wherein said additive material includes nickel, said nickel constitutes 0.1-23.5 wt. % of said dissolvable magnesium cast composite.

138. (Proposed Substitute for Claim 55) The dissolvable magnesium cast composite as defined in claim [23]108, wherein said additive material includes nickel, said nickel constitutes 0.1-23.5 wt. % of said dissolvable magnesium cast composite.

139. (Proposed Substitute for Claim 56) The dissolvable magnesium cast composite as defined in claim [27]112, wherein said additive material includes nickel, said nickel constitutes 0.1-23.5 wt. % of said dissolvable magnesium cast composite.

140. (Proposed Substitute for Claim 57) The dissolvable magnesium cast composite as defined in claim [28]113, wherein said wherein said additive material includes nickel, said nickel constitutes 0.1-23.5 wt. % of said dissolvable magnesium cast composite.

141. (Proposed Substitute for Claim 58) The dissolvable magnesium cast composite as defined in claim [19]104, wherein said additive material includes

copper, said copper constitutes [0.01-35] 15-35 wt. % of said dissolvable magnesium cast composite.

142. (Proposed Substitute for Claim 59) The dissolvable magnesium cast composite as defined in claim [20]105, wherein said additive material includes copper, said copper constitutes [0.01-35] 15-35 wt. % of said dissolvable magnesium cast composite.

143. (Proposed Substitute for Claim 60) The dissolvable magnesium cast composite as defined in claim [22]107, wherein said additive material includes copper, said copper constitutes [0.01-35] 15-35 wt. % of said dissolvable magnesium cast composite.

144. (Proposed Substitute for Claim 61) The dissolvable magnesium cast composite as defined in claim [23]108, wherein said additive material includes copper, said copper constitutes [0.01-35] 15-35 wt. % of said dissolvable magnesium cast composite.

145. (Proposed Substitute for Claim 63) The dissolvable magnesium cast composite as defined in claim [28]113, wherein said additive material includes copper, said copper constitutes [0.01-35] 15-35 wt. % of said dissolvable magnesium cast composite.

146. (Proposed Substitute for Claim 64) The dissolvable magnesium cast composite as defined in claim [19]104, wherein said additive material includes

copper, said copper constitutes 0.5-15 wt. % of said dissolvable magnesium cast composite.

147. (Proposed Substitute for Claim 65) The dissolvable magnesium cast composite as defined in claim [20]105, wherein said additive material includes copper, said copper constitutes 0.5-15 wt. % of said dissolvable magnesium cast composite.

148. (Proposed Substitute for Claim 66) The dissolvable magnesium cast composite as defined in claim [22]107, wherein said additive material includes copper, said copper constitutes 0.5-15 wt. % of said dissolvable magnesium cast composite.

149. (Proposed Substitute for Claim 67) The dissolvable magnesium cast composite as defined in claim [23]108, wherein said additive material includes copper, said copper constitutes 0.5-15 wt. % of said dissolvable magnesium cast composite.

150. (Proposed Substitute for Claim 68) The dissolvable magnesium cast composite as defined in claim [27]112, wherein said additive material includes copper, said copper constitutes 0.5-15 wt. % of said dissolvable magnesium cast composite.

151. (Proposed Substitute for Claim 69) The dissolvable magnesium cast composite as defined in claim [28]113, wherein said additive material includes

copper, said copper constitutes 0.5-15 wt. % of said dissolvable magnesium cast composite.

152. (Proposed Substitute for Claim 70) The dissolvable magnesium cast composite as defined in claim [19]104, wherein said additive material includes cobalt, said cobalt constitutes 0.1-20 wt. % of said magnesium composite.

153. (Proposed Substitute for Claim 71) The dissolvable magnesium cast composite as defined in claim [20]105, wherein said wherein said additive material includes cobalt, said cobalt constitutes 0.1-20 wt. % of said magnesium composite.

154. (Proposed Substitute for Claim 72) The dissolvable magnesium cast composite as defined in claim [22]107, wherein said wherein said additive material includes cobalt, said cobalt constitutes 0.1-20 wt. % of said magnesium composite.

155. (Proposed Substitute for Claim 73) The dissolvable magnesium cast composite as defined in claim [23]108, wherein said wherein said additive material includes cobalt, said cobalt constitutes 0.1-20 wt. % of said magnesium composite.

156. (Proposed Substitute for Claim 74) The dissolvable magnesium cast composite as defined in claim [27]112, wherein said wherein said additive material includes cobalt, said cobalt constitutes 0.1-20 wt. % of said magnesium composite.

157. (Proposed Substitute for Claim 75) The dissolvable magnesium cast composite as defined in claim [28]113, wherein said wherein said additive material includes cobalt, said cobalt constitutes 0.1-20 wt. % of said magnesium composite.

158. (Proposed Substitute for Claim 76) The dissolvable magnesium cast composite as defined in claim [19]104, wherein said additive material includes one or more metal materials selected from the group consisting of 0.1-35 wt. % copper, 0.1-24.5 wt. % nickel and 0.1-20 wt. % cobalt.

159. (Proposed Substitute for Claim 77) The dissolvable magnesium cast composite as defined in claim [29]114, wherein said additive material includes one or more metal materials selected from the group consisting of 0.1-35 wt. % copper, 0.1-24.5 wt. % nickel and 0.1-20 wt. % cobalt.

160. (Proposed Substitute for Claim 78) The dissolvable magnesium cast composite as defined in claim [22]107, wherein said additive material includes one or more metal materials selected from the group consisting of 0.1-35 wt. % copper, 0.1-24.5 wt. % nickel and 0.1-20 wt. % cobalt.

161. (Proposed Substitute for Claim 79) The dissolvable magnesium cast composite as defined in claim [23]108, wherein said additive material includes one or more metal materials selected from the group consisting of 0.1-35 wt. % copper, 0.1-24.5 wt. % nickel and 0.1-20 wt. % cobalt.

162. (Proposed Substitute for Claim 80) The dissolvable magnesium cast composite as defined in claim [27]112, wherein said additive material includes one or more metal materials selected from the group consisting of 0.1-35 wt. % copper, 0.1-24.5 wt. % nickel and 0.1-20 wt. % cobalt.

163. (Proposed Substitute for Claim 81) The dissolvable magnesium cast composite as defined in claim [28]113, wherein said additive material includes one or more metal materials selected from the group consisting of 0.1-35 wt. % copper, 0.1-24.5 wt. % nickel and 0.1-20 wt. % cobalt.

CERTIFICATE OF SERVICE

The undersigned hereby certifies that a copy of the foregoing contingent PATENT OWNER'S MOTION TO AMEND UNDER 37 C.F.R. § 42.121 and any supporting exhibits was served on November 22, 2023, by filing this document through the Patent Review Processing System as well as by email directed to the attorneys of record for Petitioner:

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CERTIFICATE OF COMPLIANCE

Patent Owner, Terves, LLC, certifies the following:

1. This brief complies with the type-volume limitation of 37 C.F.R. § 42.24(a)(1)(i). Specifically, this brief contains 25 pages excluding parts of the brief exempted by 37 C.F.R. § 42.24(a)(1); and

2. This brief complies with the typeface requirements of 37 C.F.R. § 42.6(a)(2)(ii) and the type style requirements of 37 C.F.R. § 42.6(a)(2)(iii). Specifically, this brief has been prepared in a proportionally spaced typeface using Microsoft Word in a 14 point Times New Roman font.

Respectfully submitted,

/s/David B. Cupar

David B. Cupar (47,510)