

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

APEX TOOL GROUP, LLC,
Petitioner,

v.

MILWAUKEE ELECTRIC TOOL CORPORATION,
Patent Owner.

Case No. PGR2020-00056
Patent 10,422,617

PATENT OWNER'S PRELIMINARY RESPONSE TO PETITION

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PATENT OWNER'S EXHIBIT LIST

Exhibit	Description
Ex. 2001	Declaration of Expert Witness Dr. Kimberly Cameron
Ex. 2002	Declaration of Inventor Abhijeet A. Khanagar
Ex. 2003	Canadian Woodworking & Home Improvement Website on Release of Certain of Milwaukee Electric Corporation's Canadian Wide Blade (CAWB) Tape Measures in Canada
Ex. 2004	Claim Construction Order from Case No. CDCA-8-03-cv-00655-60
Ex. 2005	Claim Construction Order from Case No. DMN-0-13-cv-01287-155
Ex. 2006	Dictionary Definition of "profile"
Ex. 2007	Dictionary Definition of "such that"
Ex. 2008	Patent Office Assignment Record for Gilliam reference of Ex. 1013
Ex. 2009	Milwaukee Tool Internal stand out issue analysis 8-May-2017
Ex. 2010	Dr. Kimberly Cameron's Curriculum Vitae (CV)
Ex. 2011	Dr. Kimberly Cameron's Testifying Experience
Ex. 2012	Dictionary Definition of "define"

I. INTRODUCTION

Pursuant to 37 C.F.R. § 42.107(a), Patent Owner Milwaukee Electric Tool Corporation (“Patent Owner” or “Patent Owner Milwaukee Tool”) submits this preliminary response to the petition (Paper 1, “Petition”) to demonstrate that institution is wholly unwarranted. The Petition is fatally flawed because its eight grounds fall well short of establishing a reasonable likelihood of success as to sole independent claim 1. The Petition’s deficiencies range from (i) relying on alleged AAPA that is not statutory prior art (Grounds 1-3); (ii) requiring claim construction positions that mischaracterize the intrinsic record to make the Craig reference relevant, when it clearly is not under proper constructions of the claim terms (Grounds 4-5); and (iii) proposing a modification to Murray that Murray teaches away from (Grounds 6-8).

In short, instituting would be a waste of the Board’s limited resources as the Petition cannot succeed in demonstrating unpatentability as to the sole independent claim, so there is no reasonable likelihood of success as to any of challenged claims 1-11.

II. OVERVIEW OF PETITIONER’S GROUNDS AND SUMMARY OF REASONS TO DENY INSTITUTION

Petitioner alleges the following eight grounds of unpatentability:

Ground	Basis	Petitioner's References	Claims
1	§ 103	AAPA and general knowledge of skilled artisan	1-11
2	§ 103	AAPA , Rutty, general knowledge of skilled artisan	6-7
3	§ 103	AAPA , Critelli, general knowledge of skilled artisan	8-10
4	§ 103	Craig and general knowledge of skilled artisan	1-11
5	§ 103	Craig , Critelli, and general knowledge of skilled artisan	8-10
6	§ 103	Murray and general knowledge of skilled artisan	1-11
7	§ 103	Murray , Rutty, and general knowledge of skilled artisan	6-7
8	§ 103	Murray , Critelli, and general knowledge of skilled artisan	8-10

Grounds 1-3 allege that a CAWB 55 deg design discussed in the '617 patent is AAPA, and rely on it as the “primary reference.” While Petitioner is correct that Table 3 in the '617 patent includes the label “Prior Art 2 (CAWB 55 deg),” that label alone is legally insufficient to establish that the CAWB 55 deg design qualifies as statutory prior art. As explained by the Federal Circuit, “[i]t is common sense that an inventor, *regardless of an admission*, has knowledge of his

own work,” but “his *foundational work product should not, without a statutory basis, be treated as prior art solely because he admits knowledge of his own work.*” *Reading & Bates Construction Co. v. Baker Energy Resources Corp.*, 748 F.2d 645, 650 (Fed. Cir. 1984); *see also* MPEP § 2129 (“However, *even if labeled as “prior art,” the work of the same inventive entity may not be considered prior art against the claims unless it falls under one of the statutory categories.*”).¹

Here, the CAWB 55 deg design was Patent Owner’s prototype design, and it was not publicly disclosed, as explained by an inventor of the ’617 patent and project leader for the CAWB 55 deg design. Ex. 2002; *see also infra* Section VII. For this reason alone, the AAPA-based Grounds 1-3 should be rejected.

Grounds 4-5 rely on Craig as a primary reference, but Craig does not disclose “a curved profile” under the *proper construction* of that term. The curved profile must have a “concave upper surface” and a “convex lower surface” on the *entire* elongate tape measure blade, not on some lesser *portion* thereof as Petitioner proffers. *Infra* Section VI.B. Because Craig’s blade has a sine-wave shape (*i.e.*, it has both concave and convex curves on its upper surface), Craig’s blade is not relevant to the claimed tape measure, which has a curved profile across the entire

¹ All emphasis in quotations and highlighting in figures has been added, unless explicitly indicated otherwise.

elongate blade. *Infra* Section VIII. As such, the Board should reject Petitioner's flawed claim constructions and also reject the grounds relying thereon—Craig-based Grounds 4-5.

Grounds 6-8 rely on modifying Murray, the primary reference. However, Murray *teaches away* from the exact modification proposed by Petitioner. Petitioner argues that Murray's tape measure would be "routinely optimized" to have a taller and narrower tape measure blade. But that argument is untenable in view of Murray's explicit teaching that making a taller and narrower blade would create a less readable blade and that doing so would be commercially impractical. Put simply, Murray explicitly addressed Petitioner's proposed modification and rejected it. Ex. 1010, 7:45-50 ("the blade height H to be increased *without increasing the overall blade curvature* to a degree that *would make reading the gradations and lettering printed on the concave surface of the blade 16 difficult.*"). As such, Petitioner's proposed modification of Murray is contradicted by Murray. *Infra* Section IX. The Board should thus reject Petitioner's Murray-based Grounds 6-8.

Finally, Grounds 1-8 also fail because of an additional Petition-wide defect. The Petition asserts that "degree of curvature" was a *result-effective variable* (Petition, 29) and that "the flat width is result-effective" (*id.*, 37). In general, the Petition argues that a person having ordinary skill in the art would have known that

increasing the degree of curvature of a blade or increasing the flat width of the blade would result in greater standout distance. These assertions are insufficient to undermine the challenged claims, because “degree of curvature” is not recited in the claims, and “flat width” is only one of the numerical limitations of the claims. Claim 1 actually recites a blade that is capable of meeting two ratios: (1) “a ratio of the curved width to the flat width [] less than 0.8” and (2) “a ratio of curved height to flat width [] greater than 0.24.” Ex. 1001, claim 1; *see also infra* p. 52 (listing of claims). The Petition fails to assert, let alone prove, that these claimed ratios were known result-effective parameters. *Infra* Section XI.

As such, Petitioner's arguments related to result-effective variables should be ignored as irrelevant because the Petition fails to address the *claimed ratios*. *See General Electric Co. v. Raytheon Tech. Corp.*, IPR2020-00346, Paper 9 at 22 (PTAB June 23, 2020) (denying institution and explaining that “***Petitioner must demonstrate that the ratio was recognized to be a result-effective parameter***, not simply that the numerator (OD) and the denominator (D) were each known separately to be result-effective variables”). For this additional reason, Grounds 1-8 also fail and should all be rejected by the Board.

In summary, Petitioner has not shown a reasonable likelihood of success as to any claim in any of Grounds 1-8. Patent Owner respectfully requests the Board to deny institution.

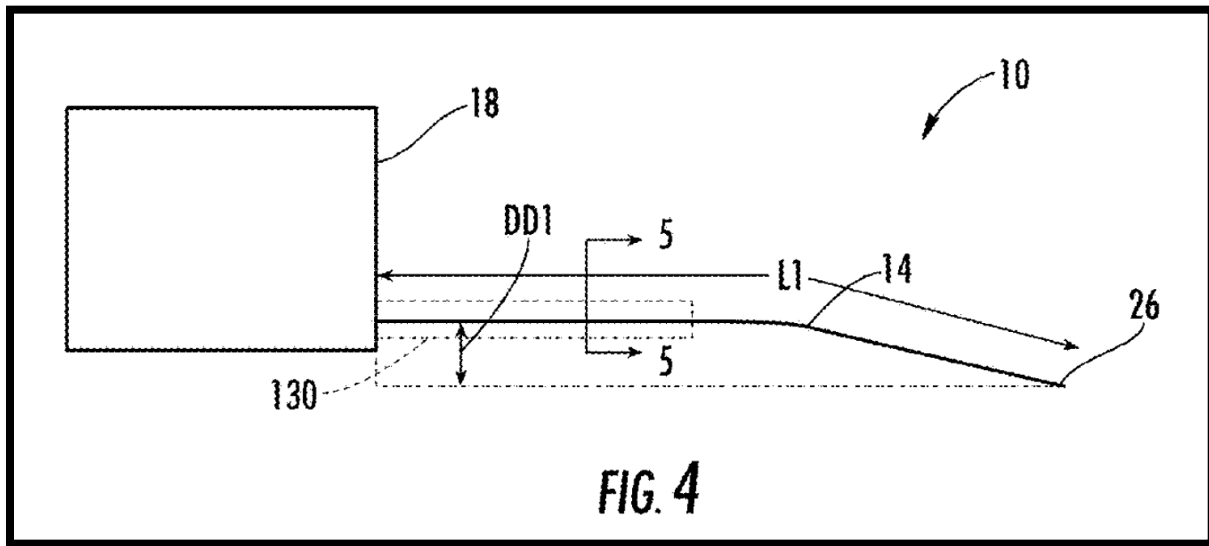
III. LEVEL OF ORDINARY SKILL IN THE ART

Even under Petitioner's definition of the level of ordinary skill in the art (Petition, 14-15), Petitioner's challenges fail to establish a reasonable likelihood of prevailing as to any claim of the '617 patent. As such, and for the purposes of this Preliminary Response only, Patent Owner does not offer a competing definition of the level of ordinary skill in the art and reserves the right to do so in the unlikely event that the Board institutes review.

Patent Owner refers to a person of ordinary skill in the art as a "PHOSITA."

IV. OVERVIEW OF PATENT OWNER MILWAUKEE TOOL'S INNOVATIVE TAPE MEASURE PROFILE DESIGNS

Consistent with Patent Owner Milwaukee Tool's established reputation for delivering innovative products, the '617 patent reflects a significant engineering undertaking to identify tape measure blade profiles resulting in improved performance, including improved standout distances. As the '617 patent explains, with reference to Figure 4, standout distance is "the maximum length, L1, of tape blade 14 that can be extended from tape housing 18 when the tape housing 18 is positioned such that the tape blade exits the housing in a direction perpendicular to gravity while self-supporting its own weight without buckling and without additional support being provided other than what the tape measure housing itself provides (*e.g.*, without the tape blade being supported by the user's hand)." Ex. 1001, 7:55-63; *see also id.*, Figure 4 (reproduced below).



There has been a long-felt need in the market for tape measures with an improved standout distance, which Petitioner acknowledges. Petition, 1. However, Petitioner oversimplifies the engineering challenges necessary to create a tape measure with improved standout distances without also (i) altering retraction torque requirements, (ii) negatively impacting readability of the measurement indications on the blade, and/or (iii) using expensive or exotic materials. Ex. 2001, ¶ 23. Patent Owner spent years working on these engineering challenges, and ultimately solved these problems with its innovative tape measures. The '617 patent describes these innovations.

Indeed, the '617 patent explains that it worked against “conventional wisdom” by achieving tape blade profiles that “provide a combination of increased standout[,] lower retraction torque and/or increased readability, while maintaining a relatively low thickness tape blade.” Ex. 1001, 5:9; *see also id.*, 15:3:9

(reiterating that the inventors of the '617 patent worked “in contrast to this conventional wisdom” and “unexpectedly discovered a variety of tape blade widths and curvatures that provide for increased standout (for a tape blade of a given thickness) without substantially altering the increasing torque that needs to be delivered by the retraction system to rewind the spring.”); Ex. 2001, ¶ 23.

The data in the '617 patent illustrates how Patent Owner was able to achieve these results as compared to the failure of others to meet this long-felt need with existing blade profile designs. *Id.*, ¶ 24. For example, Table 1 compares Patent Owner's innovative designs A, B, and C (data highlighted in yellow below) to existing tape measure designs, which are identified in the last three rows of Table 1 (data highlighted in purple below).²

² Table 1 also includes Milwaukee Tool's tape measures that were commercially available at that time. These tape measures do not meet many of the claim limitations of the challenged claims and are not relied on as prior art in Petitioner's Grounds 1-8. As such, they are not discussed in detail herein.

TABLE 1								
Tape Design	Flat Width (mm)	Steel Thickness (mm)	Total Thickness (mm)	Angle-Laser (deg)	Curved Height-Laser (mm)	Curved Width-Laser (mm)	Droop @10 ft (in)	Standout (in)
A	30	0.11	0.18	57.39	8.8515	21.85	22-25	156-160
B	30	0.11	0.18	62.71	9.074	21.5	20-23	160-162
C	30	0.11	0.36	49.68	9.348	21.15	23-25	159-164
D	27	0.11	0.36	72.42	7.5385	21.151	25-27	133-135
Milwaukee Electric Tool Prod. No. 48-22-7116	27	0.13	0.19	96.26	5.904	23.4	N/A	108-112
Milwaukee Electric Tool Prod. No. 48-22-7135	27	0.12	0.19	91.12	6.281	22.8	N/A	110-114
Milwaukee Electric Tool Prod. No. 48-22-7526	32	0.13	0.18	58.48	8.986	23.9	34-36	142-146
Prior Art Tape No. 1	31.75	0.13	0.18	62	9.1835	23.651	31-32	145 avg
Prior Art Tape No. 2	31.75	0.13	0.22	64	9.166	23.601	28-29	149 avg
Prior Art Tape No. 3	31.75	0.13	0.18	88	7.9675	26.05	32-33	138 avg

Patent Owner's innovative designs (*i.e.*, A-C) have blades with a narrower flat width and thinner steel thickness than the prior art designs in Table 1, yet utilize Patent Owner's inventive tape blade profile designs to achieve increased standout distances and decreased droop as compared to existing tape measure designs. Ex. 2001, ¶ 24-25. This is contrary to conventional wisdom because it was previously believed that bigger tape blades (*i.e.*, wider flat width and greater thickness) were necessary to decrease droop and increase standout. *Id.*, ¶ 25. However, Patent Owner's innovative designs do not follow this conventional wisdom. They have smaller blades than the competitor prior art designs in Table 1

(*i.e.*, flat width of 30 mm compared to 31.75 mm, and a thickness of 0.11 mm compared to 0.13 mm), yet they have less droop (*i.e.*, about 20-25 inches compared to 28-33 inches) and more standout (*i.e.*, about 156-164 inches compared to 138-149 inches). *Id.*, ¶ 26.

Additionally, for the first time in this field, the '617 patent identified the blade-dimension ratios that should be maintained to achieve these advantageous results, including (i) a ratio of curved height to flat width, (ii) a ratio of curved height to steel thickness, (iii) a ratio of curved width to flat width, and (iv) a ratio of blade angle to flat width. *See, e.g.*, Ex. 1001, Table 2 (13:34-60); *see also* Ex. 2001, ¶ 26.

These innovations are reflected in the claims of the '617 patent. In particular, the claims recite appropriate blade dimensions and ratios between these dimensions (*i.e.*, ratio of curved width to flat width and ratio of curved height to flat width). Ex. 1001, claim 1; *see also id.*, claims 2-3 and 10 (also reciting ratio of curved height to steel thickness T1). Patent Owner's careful balance of determining the right blade dimensions (*e.g.*, to keep material costs down and to reduce the size the tape measure) while also maintaining necessary ratios between these dimensions, allowed Patent Owner to create a new tape measure with less droop and more standout. Ex. 2001, ¶¶ 19-27.

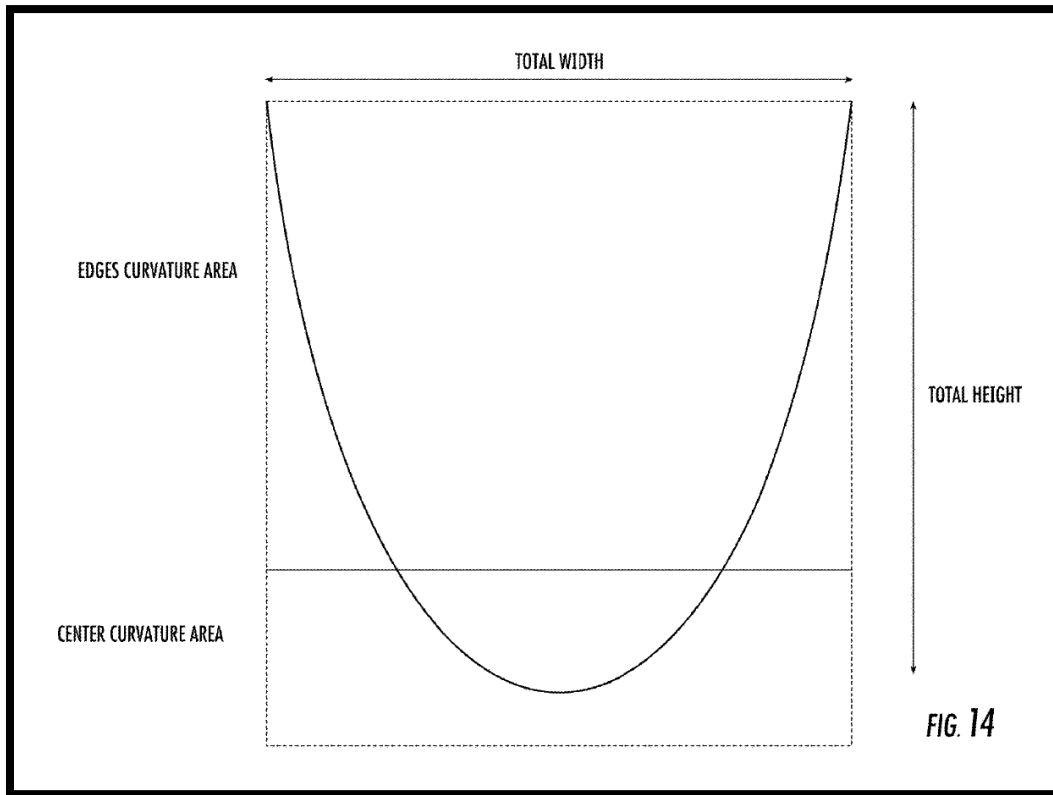
V. OVERVIEW OF THE CLAIMS OF THE '617 PATENT

As it relates to the Petition, many of the limitations of the '617 Patent's claims recite surfaces, dimensions, and calculated ratios of an elongate blade of a tape measure. The elongate blade has two primary surfaces: an upper surface (*e.g.*, where markings are typically printed) and an opposing lower surface. These upper and lower surfaces are described as having a particular geometric shape, *i.e.*, the upper surface is “the concave upper surface” in the patent, and the lower surface is “the convex lower surface” in the patent. Ex. 1001, 6:41-43. In other words, the upper surface of the elongate blade is concave (*i.e.*, having a surface that curves inward like the interior of a circle), and the lower surface of the elongate blade is convex (*i.e.*, having a surface curved like the exterior of a circle).

The elongate blade, and its upper and lower surfaces, can be viewed from a variety of angles. For example, the elongate blade can be viewed from the top or bottom, or via an isometric perspective. The elongate blade can also be viewed in profile (*i.e.*, a cross-sectional view). Viewing the elongate blade in profile depicts an outline of the entire elongate blade, including its concave upper surface and convex lower surface.

The patent includes numerous cross-sectional views showing the profile of such elongate blades. For example, Figure 14 (below) depicts a profile of an elongate blade. This figure identifies the curved width (labelled as “total width”)

and the curved height (labelled as “total height”) of the elongate blade. Ex. 2001, ¶ 21. It also identifies various sections of the profile, including a curve with one radius (labelled as the “center curvature area”) and two other curves with a different radius than the center curve (labeled as the “edge curvature areas”).



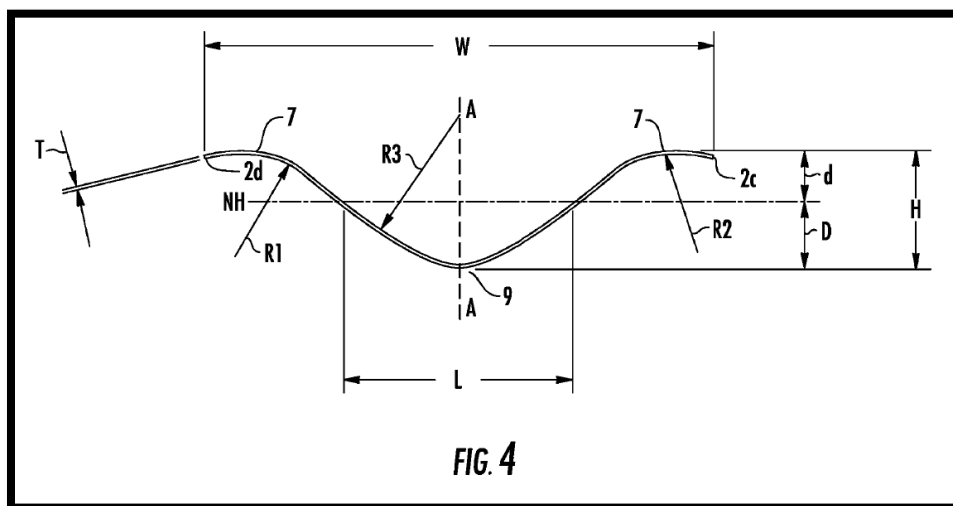
Ex. 1001, Figure 14.

VI. CLAIM CONSTRUCTION

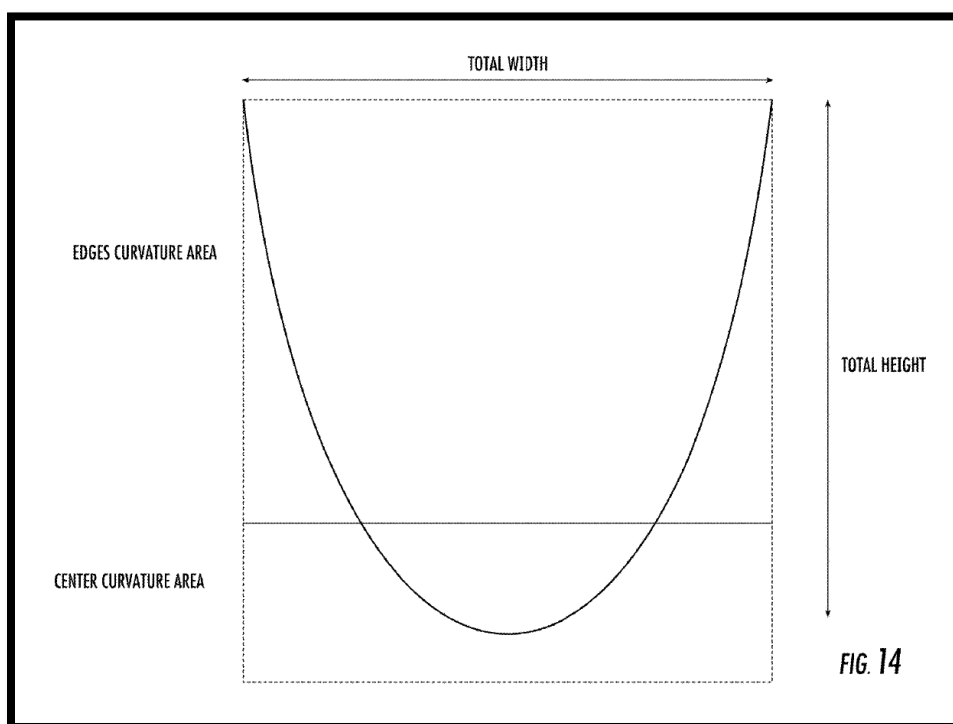
Petitioner proposes construing four terms: (1) “a flat width”; (2) “a curved width,” (3) “the upper surface ...”; and (4) “the lower surface ...” Petition, 15-25. For terms 1 and 2, Petitioner argues that these refer to the width of the *entire* elongate blade, yet for terms 3 and 4, Petitioner takes the opposite position that

only a **portion** of the width of the elongate blade is pertinent, *i.e.*, that only a portion of the elongate blade's upper (or lower) surfaces need to be concave (or convex), respectively. Petition, 16 (“The entire lower surface is not required to be convex” and “the entire upper surface is not required to be concave.”). Petitioner's need for these conflicting constructions is transparent—to sweep the sine-wave-shaped tape measure blade of Craig within the scope of the challenged claims. The challenged claims, however, are directed to a generally U-shaped blade profile. Specifically, the claims state that “the elongate blade” comprises a “curved profile such that the upper surface of the elongate blade defines a concave surface and the lower surface defines a convex surface.” Ex. 1001, claim 1; *see also id.*, Figure 14 (above).

Unlike the challenged claims, Craig's blade has a concave curve (trough 9 of Craig's blade 2, shown below) **and two convex curves** (peaks 7 of Craig's blade 2, shown below) on the upper surface of the tape measure blade. *Compare* Ex. 1009, Figure 4 (below) *with* Ex. 1001, Figure 14 (below).



Ex. 1009, Figure 4 (showing Craig's sine-wave-shaped blade).



Ex. 1001, Figure 14 (showing the '617 patent's generally U-shaped blade).

Because Craig's sine-wave-shaped blade is so different than the '617 patent's generally U-shaped blade, Petitioner argues that the Board should adopt

constructions that shoehorn Craig's sine-wave-shaped blade within the scope of the claims. Petitioner's position requires accepting its inconsistent arguments that the *same elongate blade* in claim 1 sometimes refers to the width of the entire elongate blade (for the "curved width" and "flat width" terms) and at other times only refers to a portion of the width of the same elongate blade (for the "curved profile" term). The Board should not accept such inconsistencies, especially because Petitioner's construction for "curved profile" has no support in either the intrinsic or extrinsic evidence. As a result, Craig's sine-wave-shaped tape measure blade is not relevant to the challenged claims, and the Board should reject Petitioner's attempt to wish it so with its flawed claim constructions.

A. "a flat width" and "a curved width" (Terms 1 and 2)

In the interest of narrowing the disputed issues, Patent Owner agrees that the Petition's constructions of "a flat width" and "a curved width" are consistent with the intrinsic evidence. For both terms, the Petition acknowledges that these terms are related to "*the elongate blade comprising*," and then argues that because of this, (i) "the flat width recited in the claim is the flat width of *the entirety of the blade*" (Petition, 22) and (ii) "the relevant curved width is the curved width of *the entire elongate blade*" (*id.*, 23). Construing these terms to refer to the *entire* width of the elongate blade is consistent with the intrinsic evidence. As such, Patent Owner agrees with these constructions.

B. “a curved profile...the upper surface...the lower surface” (Terms 3 and 4)

Patent Owner does not agree with Petitioner's constructions of “upper surface” and “lower surface,” because those constructions are not supported by the intrinsic evidence and are inconsistent with Petitioner's construction for terms 1 and 2. The Petition's focus on “upper surface” and “lower surface,” and its inclusion of a negative limitation, removes these terms from their proper context as part of the “curved profile” limitation in claim 1. Just like the “flat width” and “curved width” terms discussed above, the “curved profile” also refers to “*the elongate blade comprising*,” as shown in claim 1 below:

1. A tape measure comprising:

a housing;

a tape reel rotatably mounted within the housing;

an elongate blade wound around the reel, *the* elongate blade comprising:

an upper surface;

a lower surface;

a curved profile such that the upper surface of the elongate blade defines a concave surface and the lower surface defines a convex surface;

a flat width greater than or equal to 29 mm and less than 32 mm;

a curved width between 20 mm and 23 mm;

...

Ex, 1001, Claim 1.

Thus, just like Petitioner's constructions for other component parts of the elongate blade, the "curved profile" also refers to the width of the *entire* elongate blade, not only a portion of it, as Petitioner argues with its negative limitation. The disputed constructions for "curved profile" are summarized below:

"A curved profile such that the upper surface of the elongate blade defines a concave surface and the lower surface defines a convex surface"	
Petitioner's Proposed Construction	Patent Owner's Proposed Construction
The upper surface of the elongate blade must make or form a concave surface. The entire upper surface is not required to be concave. Petition, 15. The lower surface of the elongate blade must form a convex surface. The entire lower surface is not required to be convex. Petition, 16.	"an outline of the curved width of the entire elongate blade that results in (i) a concave upper surface and (ii) a convex lower surface"

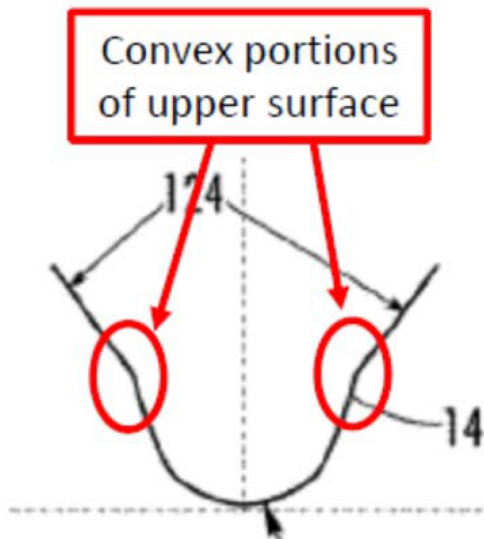
The parties agree that these terms refer to the width of the elongate blade. The parties' primary dispute centers on one aspect of these terms. Petitioner argues that only a *portion* of the upper/top surface needs to be concave and that only a *portion* of the lower/bottom surface needs to be convex (Petition 15-16),

while Patent Owner (and the claim itself) explains that curved profile refers to the *entire* elongate blade where the upper/top and lower/bottom surfaces, respectively, have concave and convex surfaces. In short, the *entire* elongate blade is concave or convex, and not only some undefined *portion* of the elongate blade.

The claim language supports Patent Owner's construction. Indeed, Patent Owner's construction of "curved profile" as "an outline of the curved width of the entire elongate blade that results in (i) a concave upper surface and (ii) a convex lower surface" properly accounts for the upper and lower surfaces being part of the recited "curved profile" of the elongate blade. Patent Owner's construction also accounts for the recited "curved profile" referring to the entire elongate blade because it is part of "the elongate blade comprising" (*i.e.*, "*the*" refers to the earlier antecedent of "*an* elongate blade wound around the reel"), and not only a portion of that elongate blade.

Petitioner agrees that the same claim language of "*the* elongate blade comprising: ..." requires construing the "flat width" and "curved width" terms to refer to the *entire* width of the elongate blade, as explained above (*supra* Section VI.A). By Petitioner's own logic, the "curved profile" term must also refer to the width of the *entire* elongate blade. Instead of following its own logic, Petitioner seeks to read the phrase "*curved profile*" out of the claims by arguing that the "entire upper surface is not required to be concave" and that the "entire lower

surface is not required to be convex.” Petition, 15-16. In an attempt to support this position, Petitioner focuses on Figure 6 of the '617 patent. Specifically, Petitioner alleges that Figure 6 (Petitioner's annotation shown below in red) depicts both a concave *and* a convex curve on the upper surface of the blade, and thus the claims must be construed to cover a blade where only a *portion* of the upper surface is concave. Petition, 17-18.



Id., 18 (Figure 6 of patent with red annotations added by Petitioner).

Petitioner's annotations of Figure 6 (in red above) identifying alleged convex portions are demonstrably wrong, which is one of the five reasons explained below for rejecting Petitioner's claim construction position.

First, the patent explains that Figure 6 is an *exaggerated view* of the profile of a blade. It does not show the actual curved profile of a blade. Ex. 2001, ¶¶ 30-

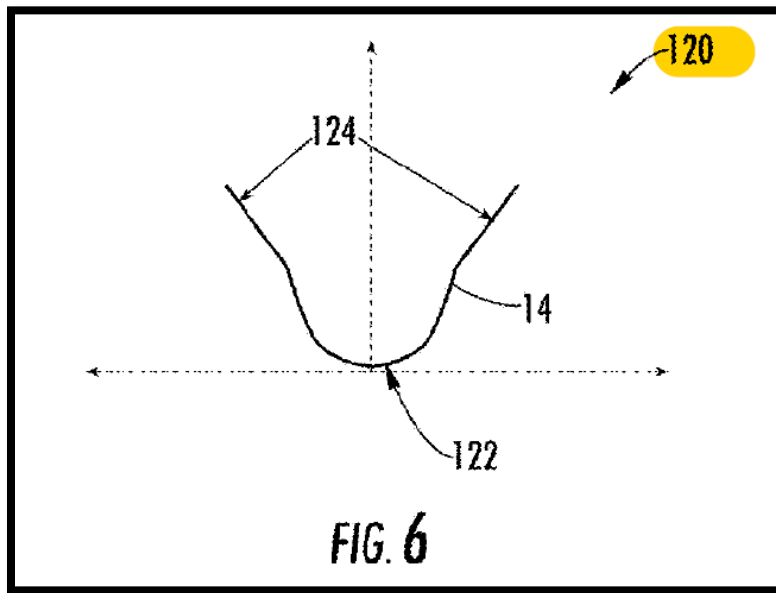
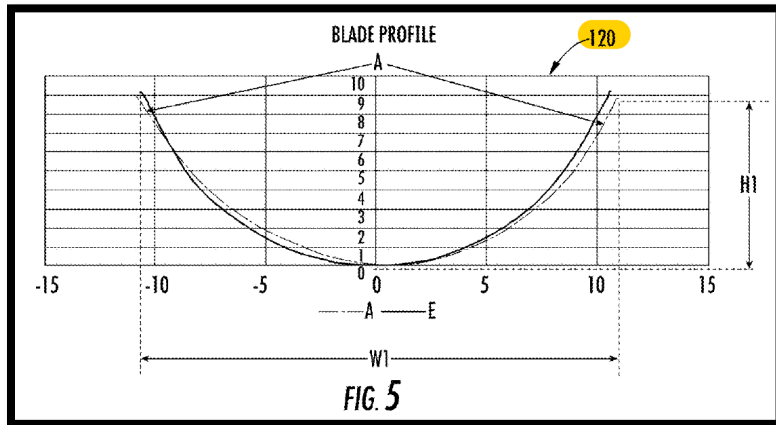
33. Instead, this exaggerated view shows a compound surface with more than one concave curve (*i.e.*, at least one curve in the middle with a small radius and at least one other curve formed at the edges with a larger radius). In particular, the specification explicitly states that in Figure 6 “the relative position between the central section 122 of profile 120 and the widthwise outer sections 124 of profile 120 is ***exaggerated*** to better demonstrate the shape of profile 120,” and then states that “profile 120 is not a continuous curve.” *Id.*, 10:63-66. The specification goes on to explain that “the upper surfaces of outer sections 124 have a greater radius of curvature than central section 122.” (Ex. 1001, 11:1-2).

As such, Figure 6 is an exaggerated view of the actual curved profile of the blade, and it is merely intended to show that this blade comprises multiple concave curves, each with a different radius, along the upper surface. Ex. 2001, ¶¶ 30-33. The patent never describes any curve of the upper surface of Figure 6 as a convex curve. Figure 6 merely confirms that the entire curved profile 120 can be formed of ***multiple concave curves*** (*i.e.*, a compound curve) as opposed to a ***single continuous concave curve*** (*i.e.*, a simple curve).

In addition to Figure 6, the specification also includes numerous other figures that undermine Petitioner's argument that Figure 6 depicts a blade having an upper surface that is both concave and convex. Ex. 2001, ¶¶ 34-37. Figure 5 depicts the same curved profile 120 as Figure 6. However, Figure 5 depicts the

actual shape of the curved profile and is *not exaggerated* as it was in Figure 6.

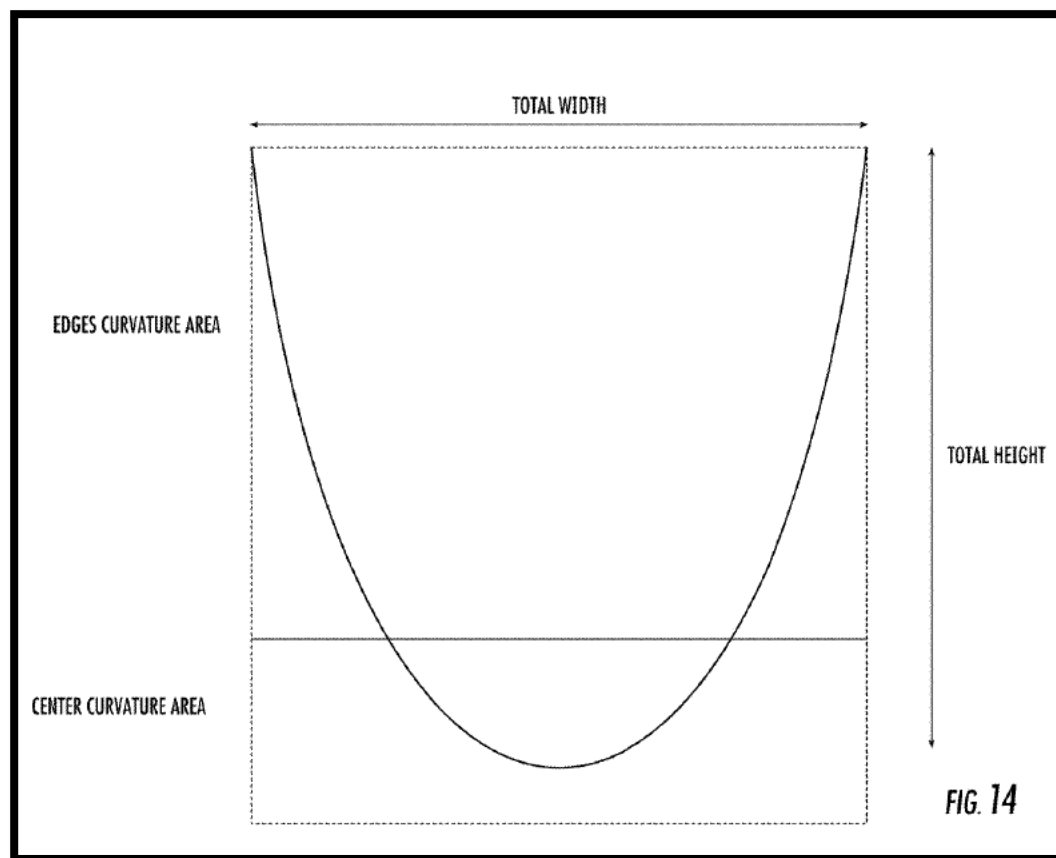
These two figures are reproduced below.



Id., Figures 5-6. Figure 5 confirms that the upper surface of the curved profile 120 of the elongate blade forms a concave upper surface with no convex curves. Ex. 2001, ¶ 34.

Other figures in the patent confirm that the curved profile of the elongate blade forms a concave upper surface with no convex curves. *See, e.g.*, Figure 14

(below).



Ex. 1001, Figure 14; *see also id.*, 4:18-19 (describing Figure 14 as showing “an exemplary tape blade profile labeling the various dimensions listed in Table 3.”).

Similar to Figures 5 and 6, Figure 14 also depicts two edge areas and a center curvature area. Unlike Figure 6, Figure 14 does ***not exaggerate*** the junction between these areas. As such, Figure 14 further confirms that there is no convex curve on any portion of the upper surface of the curved profile of the elongate blade. Ex. 2001, ¶ 35.

Placing Patent Owner's construction side-by-side with other figures in the

'617 patent also shows that Patent Owner's construction is consistent with the intrinsic record.

Patent Owner's Construction	Figures of the '617 Patent
“an outline of the curved width of the entire elongate blade that results in (i) a concave upper surface and (ii) a convex lower surface”	FIG. 7: MILWAUKEE TOOLS BLADES - CURRENT AND FUTURE. Legend: PROTOTYPE BLADE A, PROTOTYPE BLADE B, PROTOTYPE BLADE C, PROTOTYPE BLADE D, MILWAUKEE TOOL 48-22-7526, MILWAUKEE TOOL 48-22-7116, MILWAUKEE TOOL 48-22-7135. FIG. 9: ROW TARGETED BLADES. Legend: PROTOTYPE BLADE A, PROTOTYPE BLADE B, PROTOTYPE BLADE C, MILWAUKEE TOOL 48-22-7526. FIG. 10: THICK vs THIN BLADES. Legend: PROTOTYPE BLADE B, PROTOTYPE BLADE C. FIG. 11: ALL BLADES. Legend: PROTOTYPE BLADE A, PROTOTYPE BLADE B, PROTOTYPE BLADE C, PROTOTYPE BLADE D, MILWAUKEE TOOL 48-22-7526, MILWAUKEE TOOL 48-22-7116, MILWAUKEE TOOL 48-22-7135, PRIOR ART TAPE 2 @12h, PRIOR ART TAPE 1 @12h, PRIOR ART TAPE 3 @12h. FIG. 12: IMPROVEMENT OVER PRIOR ART. Legend: PROTOTYPE BLADE B, PRIOR ART TAPE 2 @12h, PRIOR ART TAPE 1 @12h, PRIOR ART TAPE 3 @12h.

Ex. 1001, Figures 7, 9, 10, 11, and 12; *see also* Ex. 2001, ¶¶ 36-37..

In short, Petitioner and its expert misinterpret Figure 6. Ex. 2001, ¶ 37. The '617 patent's figures and descriptions in the specification confirm that the curved profile of the entire elongate blade refers to the upper (or lower) surface being

concave (or convex). Petitioner's position that the curved profile of the elongate blade only refers to a *portion* of the upper (or lower) surface is based on a misunderstanding of Figure 6, and must be rejected.

Second, putting aside the issue of whether Figure 6 shows any convex curve on the upper surface of the elongate blade (it does not), Petitioner also argues that that Figure 6 depicts “compound curvature” (*i.e.*, concave curves of different radii) and that is an unclaimed feature. Indeed, Petitioner states that a “compound curve is illustrated in Figure 6” (Petition, 8), and then argues that “the concept of compound curvature” is “*not claimed.*” Petition, 28; *see also id.*, 9 (Petitioner acknowledging that “*none of the 11 claims* in the '617 patent require that the blade *have a compound curved shaped.*”). As such, if Petitioner is right that the claims do not cover a compound curvature blade, then its claim construction argument has

no intrinsic support.³ Figure 6 depicts a blade with compound curvature,⁴ so under Petitioner's theory, that figure cannot support Petitioner's claim construction argument.

Third, when Patent Owner wanted to restrict the scope of a claim to only a “portion” of an object (as Petitioner proposes), Patent Owner explicitly did so. For example, claim 6 recites that “the ***curved profile*** is located along a lengthwise ***portion of the elongate blade*** having a length less than a total length of the elongate blade.” Ex. 1001, Claim 6. Patent Owner did not include such wording in claim 1, and the Board should not alter the scope of claim 1 to appease Petitioner's desire to include Craig within the scope of this claim.

³ Petitioner's reliance on the word “defines” (Petition, 16) is both (i) unpersuasive as failing to remedy Petitioner's failure to account for claim 1's inclusion of the upper and lower surfaces as part of the “curved profile” and (ii) is inconsistent with dictionary definitions, which definitions further support Patent Owner's construction of “curved profile.” *See, e.g.*, Ex. 2012 (definition of “define” as “to delineate the form or outline of” and “to determine the boundary or extent of”).

⁴ Petitioner confusingly refers Figure 6 as “the preferred embodiment” (Petition, 16), but the patent never refers to it as such. Instead, it is merely referred to as “an exemplary embodiment.” Ex. 1001, 10:62-63 and 3:63-64.

Fourth, turning to extrinsic evidence, Patent Owner's construction is also consistent with dictionary definitions of "**profile**" (*i.e.*, meaning "an outline of something") and "**such that**" (*i.e.*, meaning "used to express purpose or result.") Ex. 2006 (dictionary definition of "profile"); Ex. 2007 (dictionary definition of "such that"). Courts have also interpreted these same words in a manner consistent with these dictionary definitions and Patent Owner's proposed construction. *See Nini Policapelli v. Heineken USA, Inc.*, Case No. SACV 03-655-JVS (copy of decision attached as Exhibit 2004) (construing "profile" to mean "the outline or contour of the outer surface of a container"); *3M Innovative Prop. Co. v. GDC Inc.*, Case No. 13-1287 (DWF.JJK) (copy of decision attached as Exhibit 2005) (construing "such that" to require a causal relationship as "causing the result that").

Fifth, Petitioner's proposed constructions for these terms result in inconsistencies with other terms in the claims, in particular the "flat width" and "curved width" limitations. It would be improper to construe the "curved profile" term to only refer to a **portion** of the elongate blade, while at the same time construing the flat width and curved width terms to refer to the **entire** elongate blade. None of these claim terms use the word "portion" and it would be illogical to read this limitation into some claim terms, but not others. All of the claim terms-at-issue ("curved profile," "flat width," "curved width") are part of the same elongate blade, and nothing in the intrinsic record suggests that the curved profile

only refers to a portion of the elongate blade, while the flat width and the curved width refer to the entire elongate blade. Instead, just like Petitioner's constructions for "flat width" and "curved width," the claim term "curved profile" refers to the entire elongate blade, which has a concave upper surface and a convex lower surface. In short, all of these terms should be given their plain and ordinary meanings, which are consistently shown in the specification to refer to the entire elongate blade.

For at least the above reasons, Petitioner's constructions of upper and lower surface should be rejected as inconsistent with the intrinsic and extrinsic evidence. The complete phrase in which these terms appear (*i.e.*, "a curved profile such that the upper surface of the elongate blade defines a concave surface and the lower surface defines a convex surface") should be construed in accordance with its plain meaning as "an outline of the curved width of the entire elongate blade that results in (i) a concave upper surface and (ii) a convex lower surface."

**VII. AAPA-BASED GROUNDS 1-3 FAIL BECAUSE THE RELIED-UPON
CAWB 55 DEG DESIGN DOES NOT QUALIFY AS STATUTORY
PRIOR ART**

Petitioner bears the burden to demonstrate – in the Petition – that the alleged AAPA (*i.e.*, CAWB 55 deg design) qualifies as prior art. *See Medtronic, Inc. v. Barry*, 891 F.3d 1368, 1380 (Fed. Cir. 2018) (noting that the "patent challenger [*i.e.*, petitioner] bears the burden of establishing that a particular document is a

printed publication”); *BMW of North America, LLC v. Carrum Tech., LLC*, IPR2019-00903, Paper 9 at 9-10 (noting that *this burden applies to AIPA used in PTAB proceedings*). Petitioner failed to meet that burden. Furthermore, it cannot meet this burden for the CAWB 55 deg design because that design was never released publicly and does not qualify as statutory prior art.

A. Petitioner's Failure to Explain How the CAWB 55 Deg Design Was Publicly Disclosed is Fatal to Grounds 1-3

Petitioner argues that the CAWB 55 deg design is prior art solely because the label in Table 3 is “Prior Art 2 (CAWB 55 deg).” Ex. 1001, Table 3. However, this label is insufficient to prove that the CAWB 55 deg design qualifies as statutory prior art. *See* MPEP § 2129 (“However, even if labeled as “prior art,” the work of the same inventive entity may not be considered prior art against the claims unless it falls under one of the statutory categories [in 35 U.S.C. § 102].”); *see also Reading & Bates Construction Co. v. Baker Energy Resources Corp.*, 748 F.2d 645, 650, 223 USPQ 1168, 1172 (Fed. Cir. 1984) (“[W]here the inventor continues to improve upon his own work product, his foundational work product should not, without a statutory basis, be treated as prior art solely because he admits knowledge of his own work. *It is common sense that an inventor, regardless of an admission, has knowledge of his own work.*”); *see also Riverwood Int’l Corp. v. R.A. Jones & Co.*, 324 F.3d 1346, 1354 (Fed. Cir. 2003)

(rejecting District Court's conclusion that "by listing the '806 patent as 'prior art,' Riverwood admitted as much and 'waive[d] the ability to raise arguments about why section 102 does not require treatment of the reference in question as prior art'"). In short, referring to CAWB 55 deg design as prior art in the specification does not automatically qualify the CAWB 55 deg design as prior art. Instead, the Petitioner must offer proof in the Petition that the CAWB 55 deg design qualifies as statutory prior art. Here, the Petitioner failed to meet its burden.

By failing to offer any such proof, specifically that the CAWB 55 deg design was known to anyone besides Patent Owner, the Petition's reliance on that design as AAPA fails. *See BMW v. Carrum*, IPR2019-00903, Paper 9 at 9-10 (discussing reliance on descriptions of problems shown in a **figure labelled as "prior art,"** and explaining that "mere discussion of problems existing in prior art systems [in connection with the figure labelled as "prior art"] **does not constitute an admission** that these problems were known to others in the art, nor does it convert the work of the [] inventors into prior art" and then holding that "**there is insufficient argument or evidence to establish that the disclosures identified by Petitioner are in fact applicant admitted prior art.**"). For this reason alone, Grounds 1-3 based on the CAWB 55 deg design are improper and the Petition should not be instituted.

B. The CAWB 55 Deg Design Was Never Disclosed to the Public and Does Not Qualify as Statutory Prior Art

Putting aside this fatal procedural flaw, Petitioner could not have shown that the CAWB 55 deg design qualifies as statutory prior art because the CAWB 55 deg design was not released to the public. Indeed, the declaration from inventor Abhijeet Khangar explains that the CAWB 55 deg design was never disclosed to the public, let alone commercialized as a final product. Ex. 2002, ¶¶ 3-7 (testifying to this fact and providing corroborating evidence in Ex. 2009); *see also* Ex. 2009 at page 3 (noting a 50% failure rate for the CAWB 55 deg design).⁵ Put simply, the CAWB 55 deg design was never “patented, described in a printed publication, or in public use, on sale, or otherwise available to the public before the effective filing date of the claimed invention” (35 U.S.C. § 102(a)(1)), because that internal design was not disclosed to the public. Exs. 2002 and 2009. This fact alone also undermines Grounds 1-3. Accordingly, the CAWB 55 deg design (Petitioner's alleged AAPA) is not prior art to the '617 patent, and Petitioner's Grounds 1-3 based on alleged AAPA all fail.

Petitioner made a choice to rely only on a label in the patent, rather than

⁵ It is also notable that the CAWB 78 deg design, which is also referred to in Table 3 of the patent, was released to the public, but within the one-year grace period, so

conduct an investigation to determine whether the CAWB 55 deg design met the legal definition of prior art. In reality, the '617 patent provided Petitioner with notice that the CAWB designs were Patent Owner's designs. Specifically, Petitioner knew, or should have known, that the CAWB designs were Patent Owner's designs because the specification lists when a prior art product was made public by a competitor. *See, e.g.*, Ex. 1001 at 12:64-66 ("The last three rows [of Table 1] show corresponding data from three prior art *competitor* tape measures"). In contrast, the CAWB designs are not identified as prior art by another entity, like a competitor. As stated in the specification, the discussion of Patent Owner's designs and products was merely "to explain principles and operation of the various embodiments." (Ex. 1001, 3:43-46). This does not transform a design, including the CAWB 55 deg design, into publicly-available statutory prior art.

Additionally, the specification states that CAWB designs are Patent Owner's designs. For example, the patent states that "FIG. 9 shows the profile of tapes A, B and C plotted relative to the 32 mm flat width 8 m *CAWB tape* that is currently

even that would not qualify as post-AIA statutory prior art. *Compare* Ex. 2002, ¶ 8 (noting a release date of Spring 2017 for a product with the CAWB 78 deg design) *with* Ex. 1001 (priority date of August 24, 2017 for the patent).

available.⁶ This figure shows the more steep profiles of tapes A, B and C relative to the profile of the *Milwaukee Electric Tool [Patent Owner] Prod. No. 48-22-7526 tape*.” Ex. 1001 at 14:33-38 (emphasis added); *see also* Figure 9 (depicting the referenced product as a CAWB design that is compared to prototype blades A, B, and C). While the referenced CAWB product no. 48-22-7526 is a different CAWB design than the CAWB 55 deg design (*compare* Table 1 (prod. no. 48-22-7526 with curved height of 8.986 and curved width of 23.9) *with* Table 3 (CAWB 55 deg design with different curved height and width)), the '617 patent's use of CAWB as referring to Patent Owner's own product provides notice that the CAWB 55 deg design in Table 3 is a reference to Patent Owner's design as well. Consequently, Petitioner knew or should have known that the CAWB 55 deg design was not a competitor tape measure, and Petitioner should have done its diligence to determine whether the CAWB 55 deg design actually qualifies as statutory prior art (it does not).

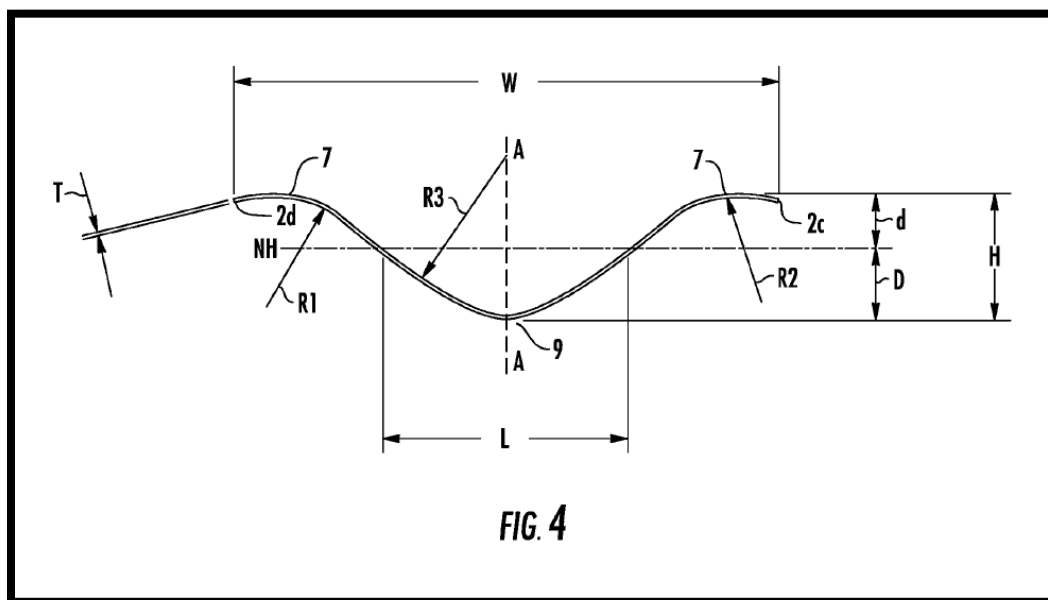
In sum, Petitioner's reliance on the CAWB 55 deg design as statutory prior art in Grounds 1-3 fails. These grounds must be denied.

⁶ While the '617 patent does passingly refer to CAWB designs as “currently available,” that refers to what was “currently available” to the inventors, and does not transform a design that was never publicly available into statutory prior art.

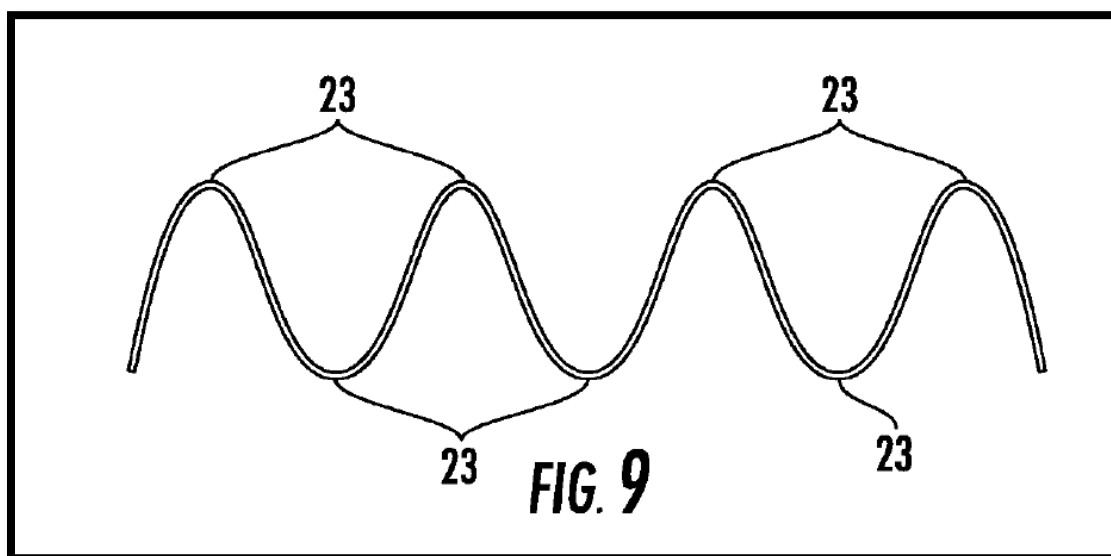
VIII. GROUNDS 4-5 FAIL BECAUSE CRAIG'S SINE-WAVE-SHAPED BLADE DOES NOT DISCLOSE THE CLAIMED "CURVED PROFILE," AS PROPERLY CONSTRUED

The Petition relies on Craig for Grounds 4 and 5. However, as discussed in the claim construction section above (*supra* Section VI), there is no basis in the intrinsic or extrinsic evidence to alter the scope of the challenged claims to make Craig's sine-wave-shaped tape measure blade relevant to the generally U-shaped elongate blade. Specifically, the concave and convex surfaces in the claims refer to the upper and lower surfaces of the entire elongate blade. Thus, the "curved profile" limitation of claim 1 is properly construed as "an outline of the curved width of the entire elongate blade that results in (i) a concave upper surface and (ii) a convex lower surface." *Supra* Section VI.B.

Craig does not disclose such a curved profile having a concave upper surface for its blade. Rather, Craig discloses an upper surface with ***both a concave and a convex portion*** (on the flip side, Craig's blade lower surface also defines convex and concave surfaces), as is shown in Craig's Figures 4 and 9 (reproduced below).



Ex. 1009, Figure 4; *id.*, [0035] (indicating that “cross-section of the blade 2 has a complex curve or wave profile,” and that the “wave profile may be similar to a sine wave shape or sinusoidal shape”).



Id., Figure 9; *see also id.*, [0037] (“FIG. 9 shows a blade having a wave profile that is formed as a rippled or serrated profile where a plurality of ridges 23 are formed

over the width of the blade.”). Craig even explains that “[t]he profile of the blade 2 is a smooth curve such that the *blade transitions smoothly from the convex curves that form the peaks 7 to the concave curve that forms the trough 9.*” *Id.*, [0035].⁷

In short, Craig does not disclose the “curved profile ...” limitation because Craig does not disclose a “an outline of the curved width of the entire elongate blade that results in (i) a concave upper surface and (ii) a convex lower surface.” Craig’s blade has both convex and concave surfaces on both its upper and lower surfaces. Thus, Grounds 4 and 5, both of which only rely on Craig for a disclosure of the recited “curved profile” of claim 1 (Petition, 55), fail. For this reason alone, Petitioner’s challenges based on Craig must be rejected.

IX. GROUNDS 6-8 FAIL BECAUSE MURRAY TEACHES AWAY FROM THE MODIFICATIONS PROPOSED IN THE PETITION

A. Petitioner’s Proposed Modification to Adjust Curved Width of Murray’s Blade is Undermined by Murray’s Own Teachings

Petitioner admits that Murray, which was cited by the Examiner during prosecution, does not disclose “a curved width [of the elongate blade] between 20

⁷ Craig’s use of the word “profile” as showing an outline of all of its blade 2 further confirms that Petitioner’s construction (which essentially reads the word profile to show some subsection of the blade) is incorrect.

mm and 23 mm,” as recited in claim 1. Petition, 75; Ex. 1001, p. 2 (Murray listed on face of the patent with an asterisk, denoting that it was found by the Examiner). Instead, Petitioner argues that it would have been obvious to modify Murray by **“increase[ing] the degree of curvature to create a lower curved width** that fell within the claimed range.” *Id.*; *see also* Ex. 2001, ¶¶ 39-40. But, Petitioner’s theory for increasing the curvature of Murray’s tape measure blade by making it taller and narrower is directly contradicted by the teachings in Murray, which both discourages and leads a PHOSITA in a path divergent from the claimed invention by teaching away from Petitioner’s proposed modification to Murray. *See Galderma Labs., L.P. v. Tolmar, Inc.*, 737 F.3d 731, 738 (Fed. Cir. 2013) (explaining that a reference teaches away “when a person of ordinary skill, upon reading the reference, would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path that was taken” in the claim); *see also* Ex. 2001, ¶¶ 39-50.

Murray specifically teaches that allowing **“the blade height *H* to be increased without increasing the overall blade curvature to a degree** that would make reading the gradations and lettering printed on the concave surface of the blade 16 difficult.” Ex. 1010, 7:45-50. Murray identifies the tape measure dimensions for its preferred embodiment, and they do not meet the limitations in the challenged claims. *Id.* Petitioner’s obviousness theory that a PHOSITA would

have been motivated to increase the degree of curvature by making the blade taller and narrower is contrary to Murray's express teaching of avoiding the narrowing of the blade in a way that would impair its readability. Ex. 2001, ¶¶ 41-44.

Notably, Petitioner has provided no evidence or argument as to how the increased degree of curvature of the modified Murray blade would still remain readable.

Murray goes even further by disparaging blades that are “very difficult to read” as “not commercially practical.” Ex. 1010, 7:52-54. Murray also observes the desirability of “[i]ncreasing the blade width” to allow for “the printing on the blade to be made larger, thus making measurements easier by making the blade easier to read.” Ex. 1010, 7:55-58. Thus, Petitioner's assertions that *narrowing* Murray's curved width would have been a matter of routine optimization (Petition at 75-76) are directly undermined by Murray's express disclosures instructing a PHOSITA not to do the very thing that Petitioner proposes. Ex. 2001, ¶¶ 39-50 (Patent Owner's expert Dr. Cameron agreeing with this conclusion, and Dr. Cameron also provides helpful example illustrations in ¶ 43 concerning how a taller and narrower blade becomes less readable).

The '617 patent's Table 1 also includes data that aligns with Murray's criticisms of making a tape measure blade too tall and narrow (*i.e.*, increasing curved height and decreasing curved width, as proposed by Petitioner). As reproduced below, for tape measure blades with a flat width of 31.75 mm (like

Murray's) (highlighted in purple below), none of those blades included a curved height above 9.1835 (highlighted in blue below) or a curved width below 23.601 (highlighted in yellow below).

TABLE 1								
Tape Design	Flat Width (mm)	Steel Thickness (mm)	Total Thickness (mm)	Angle-Laser (deg)	Curved Height-Laser (mm)	Curved Width-Laser (mm)	Droop @10 ft (in)	Standout (in)
A	30	0.11	0.18	57.39	8.8515	21.85	22-25	156-160
B	30	0.11	0.18	62.71	9.074	21.5	20-23	160-162
C	30	0.11	0.36	49.68	9.348	21.15	23-25	159-164
D	27	0.11	0.36	72.42	7.5385	21.151	25-27	133-135
Milwaukee Electric Tool Prod. No. 48-22-7116	27	0.13	0.19	96.26	5.904	23.4	N/A	108-112
Milwaukee Electric Tool Prod. No. 48-22-7135	27	0.12	0.19	91.12	6.281	22.8	N/A	110-114
Milwaukee Electric Tool Prod. No. 48-22-7526	32	0.13	0.18	58.48	8.986	23.9	34-36	142-146
Prior Art Tape No. 1	31.75	0.13	0.18	62	9.1835	23.651	31-32	145 avg
Prior Art Tape No. 2	31.75	0.13	0.22	64	9.166	23.601	28-29	149 avg
Prior Art Tape No. 3	31.75	0.13	0.18	88	7.9675	26.05	32-33	138 avg

Ex. 1001, Table 1. This, of course, stands in stark contrast to Petitioner's assertions of "routine optimizations" to make a tape measure blade with a taller curved height of 10.14 mm (0.4 inches) and with a narrower curved width of 23 mm. Ex. 2001, ¶ 46. This is summarized in the table below for ease of reference:

	Flat Width (mm)	Curved Width (mm)	Curved Height (mm)
Petitioner's Proposed Modification to Murray	31.75	23	10.14
Murray's Most Preferred Embodiment	31.75	25.86	8.13
Prior Art Tape No. 1 of the Patent's Table 1	31.75	23.651	9.1835
Prior Art Tape No. 2 of the Patent's Table 1	31.75	23.601	9.166
Prior Art Tape No. 3 of the Patent's Table 1	31.75	26.05	7.9675

Put simply, Petitioner's proposed modification of Murray results in a blade that has a narrower curved width and a taller curved height than any of the other competitors' commercially available products in Table 1 of the '617 patent. In other words, Murray's warning that taller and narrower tape measure blades were known to be "very difficult to read," and thus are "not commercially practical" (Ex. 1010, 7:52-54), is consistent with the data in Table 1.⁸ Ex. 2001, ¶ 47.

⁸ Notably, and unlike for the CAWB tape measures of Table 3, the patent specifically identifies the "last three rows [of Table 1 as] show[ing] corresponding data from three prior art *competitor tape measures*." Ex. 1001, 12:63-66.

In sum, Petitioner's proposed modification would undermine Murray's intended purpose to improve readability, and a PHOSITA would not have been motivated to modify Murray in the way proposed by Petitioner. *See, e.g.*, MPEP § 2143.01(V) ("If a proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification.") (citing *In re Gordon*, 733 F.2d 900 (Fed. Cir. 1984)).

Additionally, a PHOSITA would not have been motivated to narrow the curvature of Murray's tape measure blade while keeping the flat width constant,⁹ because Murray expressly instructs that the resulting product would not be commercially practical. *See, e.g., In re Kahn*, 441 F.3d 977, 990 (Fed. Cir. 2006) ("A reference may be said to teach away when a person of ordinary skill, upon reading the reference, would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path that was taken by

⁹ Assertions of increasing flat width would have created additional problems for Petitioner. As an example, Murray mentions that it is "within the scope of the present invention to provide a blade width of 1.5 inches or greater" (Ex. 1010, 7:42-44), but, importantly, 1.5 inches is 38.11 mm, which is well outside of the claimed flat width range of 29 mm to 32 mm recited in limitation 1[g].

the applicant.”) (quoting *In re Gurley*, 27 F.3d 551, 553 (Fed. Cir. 1994) (internal quotation marks omitted)).

For at least these reasons, Petitioner's assertion of a “routine optimization” to increase the curvature of Murray's blade is directly contradicted by Murray. Ex. 2001, ¶¶ 39-50. Thus, Petitioner's Murray-based Grounds 6-8, all of which rely on modified Murray with a taller and narrower curved blade, fail.

B. Petitioner's Proposed Modifications to Murray Introduce Additional Substantive Deficiencies

Even the proposed modification of Murray is insufficient to meet all of the limitations of the claims. For example, increasing blade curvature by decreasing curved width would adversely impact Petitioner's arguments about the curved height. Petitioner suggests increasing the “curved height from the 0.32 inches of the most preferred embodiment to 0.4 inches” (Petition, 76), but that would cause the curved height to become 10.16 mm, which is outside limitation 1[i]'s recitation of a curved height between 7 mm and 10 mm.

Similarly, after changing the curved height to 0.4 inches, as proposed by Petitioner (Petition, 76), Murray would have a ratio of curved width to flat width of 0.8145, but this is greater than the claimed < 0.8 ratio of limitation 1[d].

For these additional reasons, the Petition's Grounds 6-8 are further deficient and should be rejected.

X. PETITION-WIDE FAILURE: THE TWO DIFFERENT CLAIMED RATIOS HAVE NOT BEEN SHOWN TO BE KNOWN RESULT-EFFECTIVE VARIABLES

Putting aside the ground-specific deficiencies discussed above, all the grounds are further deficient because Petitioner argues only that “degree of curvature was clearly recognized in the prior art as ‘result-effective’” (Petition, 29) and that “the flat width is result-effective” (Petition, 37). But “degree of curvature” is not a claim limitation, and flat width is just one of the dimensional limitations in claim 1. These assertions thus fall short of proving that the claimed ratios in claim 1 were known result-effective variables. Indeed, the sole independent claim (claim 1) requires maintenance of two different ratios (*i.e.*, (1) “a ratio of the curved width to the flat width [] less than 0.8” and (2) “a ratio of curved height to flat width [] greater than 0.24”) discovered by the inventors to be result-effective in increasing tape standout without requiring an increase in retraction torque and without impairing readability of the tape measure. Petitioner has not shown that the claimed ratios as a whole were known result-effective variables, which it was required to do. *See GE v. United*, IPR2019-00212, Paper 12 at 14 (denying institution and explaining that “**it was incumbent upon the Petitioner to show that the EUTP *ratio as a whole* as recited in claim 19 was a known result-effective variable and not that just one or more of the parameters comprising EUTP was a known result-effective variable**”); *see also General*

Electric Co. v. Raytheon Tech. Corp., IPR2020-00346, Paper 9 at 22 (PTAB June 23, 2020) (denying institution and explaining that “Petitioner **must demonstrate that the ratio was recognized to be a result-effective parameter**, not simply that the numerator (OD) and the denominator (D) were each known separately to be result-effective variables”).

Furthermore, a showing that some parameters are result-effective does not establish that the claimed ratios were also known to be result-effective. *See Ex Parte Schwarz*, Appeal No. 2014-002599, at 11 (PTAB Aug. 2, 2019) (holding Examiner erred in relying on routine optimization under *Aller*, because “[w]e are not convinced that a ratio of performance quantities represents an art-recognized result-effective variable simply because each performance quantity is a product of result-effective variables”).

Tellingly, other than the computations provided by the inventors concerning the alleged AAPA (which is not statutory prior art, as was explained *supra* Section VII), none of the prior art references cited by Petitioner computes the ratios of: (i) curved width to flat width; or (ii) curved height to flat height, let alone recognizing the ***advantageous results produced by controlling these two different ratios***. The prior art's lack of any recognition of the importance of maintaining two different ratios in designing tape measure blades shows that the general conditions of claim 1 were not known in the prior art. *See E.I. du Pont de Nemours & Co. v. Synvina*,

904 F.3d 996, 1006 (quoting *In re Aller*, 220 F.2d 454, 456 (CCPA 1955), for the proposition that “*where the general conditions of a claim are disclosed in the prior art*, it is not inventive to discover the optimum or workable ranges by routine experimentation.”) (emphasis added). While the references do provide ranges of dimensions for tape measures, they do not discuss selecting values within those ranges to ensure maintenance of two different ratios (*i.e.*, Curved Width to Flat Width and Curved Height to Flat Width).

This lack of any guidance concerning how to select dimensional values for tape measure blades is underscored by the nonsensical range of allegedly acceptable values for Craig's curved width relied on in the Petition. Indeed, the Petition notes that Craig allows for a curved width up to 41.91 mm (Petition, 27), but the Petition also notes that Craig allows for a flat width of only 31.24 mm. It is self-evident that the curved width of a tape measure blade cannot be larger than its flat width. Thus, the Petition's reliance on a range of curved width values that allows for such a nonsensical possibility provides a revealing illustration of the lack of guidance provided to a PHOSITA concerning how to select appropriate values. The prior art did not recognize the two different ratios recited in claim 1, let alone teaching use of those two different ratios in the manner that claim 1 requires.

Consequently, all of the Petition's grounds are also deficient due to a failure

to demonstrate that both of the claimed ratios were known result-effective variables.

XI. DEPENDENT CLAIM-SPECIFIC DEFICIENCIES

In addition to the fatal deficiencies discussed above as to independent claim 1, the Petition also includes deficiencies that are specific to the dependent claims. Each of these additional deficiencies is discussed in turn below.

A. Grounds 4-5: Petitioner's Challenges to Claims 8-10 Fail for Additional Reasons

Claim 8 depends from claim 1, and additionally recites that the elongate blade of claim 1 also comprises “an elongate metal core,” “an **upper polymer coating coupled to an upper surface of the elongate metal core,**” and “a **lower polymer coating coupled to a lower surface of the elongate metal core.**” Ex. 1001, Claim 8. Thus, claim 8 requires that upper and lower polymer coatings are respectively coupled with upper and lower surfaces of an elongate metal core.

Petitioner's challenge to claim 8 in Ground 4 relies on a disclosure of a “sleeve” into which Craig's blade is inserted. Petition, 64. But, by failing to identify an elongate *metal core* in Craig, Petitioner has not demonstrated that Craig satisfies claim 8's requirements that the upper and lower polymer coatings be “*coupled to*” respective surfaces of the elongate metal core. While Craig does describe “a sleeve where the blade 2 fits inside of the sleeve such that the sleeve covers all sides of the blade 2” (Ex. 1009, [0042]), Craig fails to state whether this

means that the sleeve is coupled with multiple surfaces of an elongate metal core of the blade 2.

Craig even states that “the reinforcement member may be attached to the blade using a sleeve 20 such as the nylon sleeve described with reference to FIGS. 12 and 13 where **the sleeve 20 is *applied over the blade 2* and the reinforcement member 22, 32, 42, 52 as shown for example in FIG. 19.**” *Id.*, [0045]. Thus, rather than satisfy claim 8’s coupling requirement, Craig instead teaches that the sleeve 20 is separated from the blade 2 in Craig, *i.e.*, at least one of the surfaces of Craig’s blade 2 is not coupled with what Petitioner alleges to be the recited polymer coating of claim 8 because Craig’s reinforcement member separates those surfaces from Craig’s blade 2 (to the extent that blade 2 is even the recited elongate metal core of claim 8, which Petitioner has not shown).

Furthermore, the Petition’s asserted motivation to combine Craig with Critelli in Ground 5 is undermined by Petitioner’s arguments concerning Craig in Ground 4. Indeed, in Ground 4, as discussed above, Petitioner relies on Craig’s disclosure of a sleeve as teaching the recited coating of claim 8, and specifically notes that Craig’s sleeve provides for increased standout (Petition, 53 (“[t]o provide increased standout, Craig discloses ... a polymer sleeve”)). Even assuming that assertion to be true, Petitioner’s arguments in Ground 5 then make little sense. If Craig already disclosed a coating (the identified sleeve) that

accomplishes the goal of increased standout, then there would be no reason to incorporate disclosures of another type of coating from a reference like Critelli. Petitioner provides no explanation as to why a PHOSITA would have been motivated to coat a blade that is already in Craig's protective sleeve. If, as Petitioner argues, Craig's sleeve teaches the recited coating, then there would be no motivation for a PHOSITA to look to Critelli for solving a problem that Craig already addressed.

Petitioner's challenge to claims 9-10, which depend from claim 8, also fail due to these additional failures of proof.

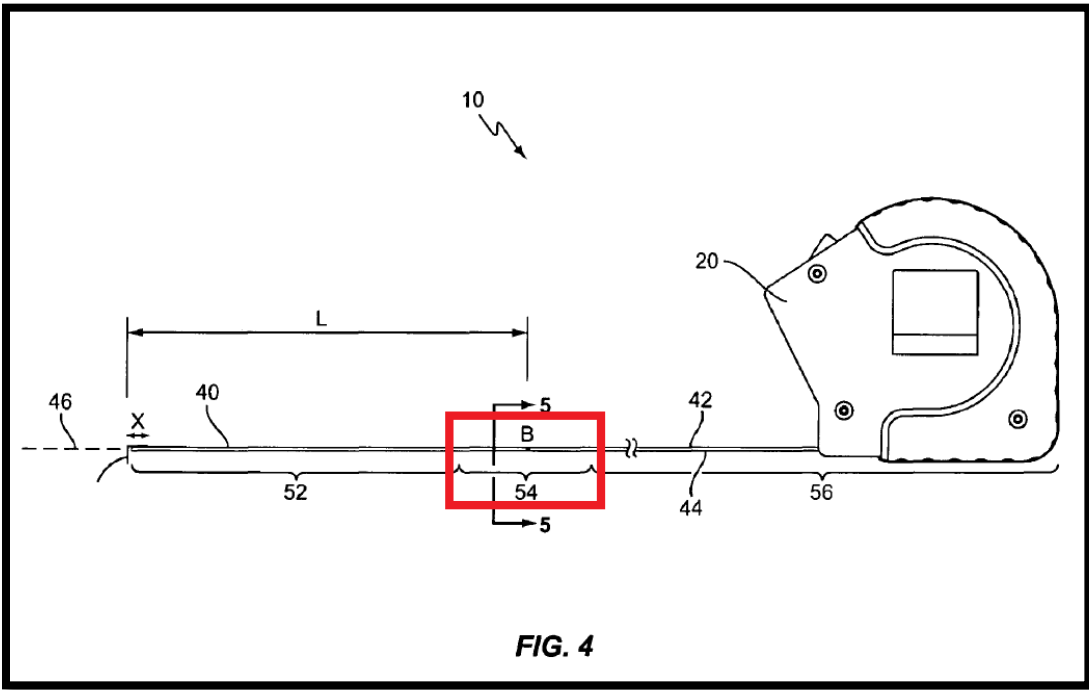
Accordingly, beyond Petitioner's failures as to claim 1, Petitioner's challenge to claims 8-10 in Grounds 4 and 5 are deficient for these additional reasons.

B. Grounds 3, 5, and 8: The Challenges to Claims 8-10 Based on Critelli Fail for Additional Reasons

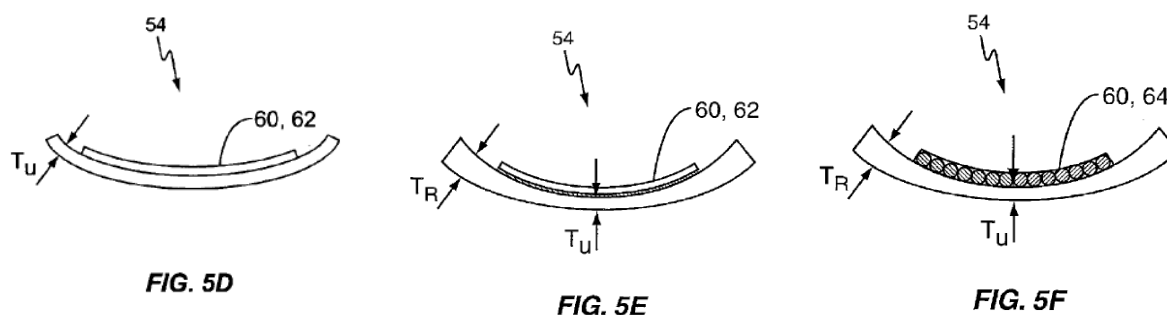
In arguing that claim 9 is obvious based on Critelli (in combination with AAPA (Ground 3), Craig (Ground 5), and Murray (Ground 8)), Petitioner relies on Critelli's coating and on a coating thickness in a Gilliam reference (Ex. 1013) that is incorporated-by-reference into Critelli. *See* Petition at 51 ("The coating thickness suggested by Critelli (through its reference to Gilliam) 'should be on the order of 0.001 [about .03 mm] inches or less on a given side of the blade.'" (Ex.

1013 at [0020].)"). While Critelli does indicate that "tape blade 40 is also typically coated with a protective coating, such as that described in" Gilliam, it is not this typical protective coating on which Petitioner relies. Ex. 1016, 4:16-20. Instead, Petitioner cites to Critelli at 5:2-7 where Critelli introduces that for "still other embodiments, the blade 40 is provided with a thicker coating in the expected buckling region 54." *Id.*, 5:2-7. Petitioner needs this "thicker coating" in order to support its motivation theory of using this thicker coating to allegedly improve tape standout.

But Critelli does not disclose the specific thickness of this "thicker coating," and Critelli also fails to disclose that this "thicker coating" is on more than one surface of an elongate metal core included in Critelli's blade (Petitioner makes no effort to identify an elongate metal core in Critelli at all). What Critelli does state about its coating is important for assessing whether Critelli teaches a coating on both sides of the blade. Critelli makes clear that "the blade 40 is provided with a **thicker coating in the expected buckling region 54** and/or is provided with an reinforcing plate 62 attached to the blade ... **in the expected buckling region 54.**" Critelli depicts its "expected buckling region 54" as a portion of Critelli's blade in Figure 4 (annotated in red below):



Ex. 1016, Figure 4. Critelli's example depictions referenced at 5:2-7 are in Figures 5D-5F, each of which show that the reinforcement (plate or coating) is on only one side of Critelli's blade:



Ex. 1012, Figures 5D-5F.

Thus, Petitioner has failed to demonstrate that Critelli teaches or suggests “an elongate metal core having a first thickness, T1; an upper polymer coating

coupled to an upper surface of the elongate metal core, the upper polymer coating having a second thickness, T2; and a lower polymer coating coupled to a lower surface of the elongate metal core, the lower polymer coating having a third thickness. T3.”^{10, 11}

Thus, the challenges in Grounds 3, 5, and 8 to claim 8, and claims 9-10 depending therefrom, all fail.

XII. THE GROUND-SPECIFIC AND PETITION-WIDE DEFICIENCIES ARE ALL INCURABLE

All of the deficiencies discussed above represent shortcomings in Petitioner's *prima facie* case that cannot be remedied post-institution. *See* Consolidated Trial Practice Guide, 74 (noting that a petitioner's "reply may only

¹⁰ It is also notable that Petitioner's repeated arguments that "it is not patentable to claim a specific thickness of tape measure blade" (Pet., 81) are inconsistent with its own presentation to the Patent Office of claims directed to specific thicknesses of parts of a tape measure blade. *See, e.g.*, Ex. 1013, Claim 25 (patent application assigned to Cooper Brands (Ex. 2008), which is a part of Petitioner, with a claim 25 directed to a specific thickness for a part of a tape measure blade).

¹¹ While Critelli does state that the plate 62 could be on both sides of the blade (Ex. 1016, 5:10-11), no such teaching is provided for the coating discussed in Critelli and relied on in the Petition.

respond to arguments raised in the corresponding opposition” and that “indications that a new issue has been raised in a reply include new evidence necessary to make out a prima facie case for the patentability or the unpatentability of an original or proposed substitute claim, and new evidence that could have been presented in a prior filing.”). This is a further reason for denying institution as Petitioner’s challenge is doomed to fail from the very start and institution would thus be an inefficient use of the Board’s limited resources. *See id.*, 56 (explaining that discretion to institute review is informed by considerations under 35 U.S.C. § 316(b) of the “effect...on the economy, the integrity of the patent system, the efficient administration of justice, and the ability of the Office to timely complete proceedings instituted under this chapter”).

XIII. CONCLUSION

For the foregoing reasons, Patent Owner respectfully requests that the Board deny the Petition.

Dated: July 15, 2020

Respectfully Submitted,

/ Alexander B. Stein /

Alexander B. Stein, Reg. No. 71.397

LISTING OF CLAIMS

Listing of Claims from U.S. 10,422,617	
Claim 1	
Preamble	1. A tape measure comprising:
1[a]	a housing;
1[b]	a tape reel rotatably mounted within the housing;
1[c]	an elongate blade wound around the reel, the elongate blade comprising:
1[c][1]	an upper surface;
1[c][2]	a lower surface;
1[c][3]	a curved profile such that the upper surface of the elongate blade defines a concave surface and the lower surface defines a convex surface;
1[c][4]	a flat width greater than or equal to 29 mm and less than 32 mm;
1[c][5]	a curved width between 20 mm and 23 mm;
1[c][6]	a curved height between 7 mm and 10 mm;
1[d]	wherein a ratio of the curved width to the flat width is less than 0.8;
1[e]	wherein a ratio of curved height to flat width is greater than 0.24; and
1[f]	a retraction system coupled to the tape reel, wherein the retraction system drives rewinding of the elongate blade on to the tape reel.
Claim 2	
Preamble	2. The tape measure of claim 1,
2[a]	wherein the ratio of the curved width to the flat width is between 0.6 and 0.8.
Claim 3	
Preamble	3. The tape measure of claim 1,

Listing of Claims from U.S. 10,422,617	
3[a]	wherein the ratio of curved height to flat width is greater than 0.285.
Claim 4	
Preamble	4. The tape measure of claim 1,
4[a]	wherein a standout distance of the elongate blade from the housing is greater than 156 inches.
Claim 5	
Preamble	5. The tape measure of claim 1,
5[a]	wherein a standout distance of the elongate blade from the housing is greater than 160 inches.
Claim 6	
Preamble	6. The tape measure of claim 1,
6[a]	wherein the curved profile is located along a lengthwise portion of the elongate blade having a length less than a total length of the elongate blade.
Claim 7	
Preamble	7. The tape measure of claim 1,
7[a]	wherein the curved profile is located at a location along at least the first 132 inches of a length of the elongate blade.
Claim 8	
Preamble	8. The tape measure of claim 1,
8[a]	wherein the elongate blade comprises:
8[a][1]	an elongate metal core having a first thickness, T 1;
8[a][2]	an upper polymer coating coupled to an upper surface of the elongate metal core, the upper polymer coating having a second thickness, T2; and

Listing of Claims from U.S. 10,422,617	
8[a][3]	a lower polymer coating coupled to a lower surface of the elongate metal core, the lower polymer coating having a third thickness. T3.
Claim 9	
Preamble	9. The tape measure of claim 8,
9[a]	wherein T1+ T2+ T3 is between 0.15 mm and 0.5.
Claim 10	
Preamble	10. The tape measure of claim 8,
10[a]	wherein the ratio of the curved height to T1 is greater than 65.
Claim 11	
Preamble	11. The tape measure of claim 1,
11[a]	wherein the retraction system is a spring-based retraction system comprising a spring coupled to the tape reel,
11[b]	wherein, as the elongate blade is unwound from the tape reel to extend from the housing, the spring stores energy and the spring releases energy driving rewinding of the elongate blade on to the tape reel.

CERTIFICATION OF COMPLIANCE WITH TYPE-VOLUME LIMITS

This Patent Owner Preliminary Response to Petition includes 10,097 words, as counted by Microsoft Word, and is therefore in compliance with the 18,700-word limit established by 37 C.F.R. § 42.24(b)(1). Accordingly, pursuant to 37 C.F.R. § 42.24(d), it is hereby certified that this paper complies with the type-volume limits established for a patent owner preliminary response to petition.

Dated: July 15, 2020

Respectfully Submitted,

/ Alexander B. Stein /

Alexander B. Stein, Reg. No. 71.397

CERTIFICATE OF SERVICE

Pursuant to 37 C.F.R. § 42.6(e), a complete copy of this Patent Owner's Preliminary Response to Petition and its supporting exhibits were provided via email to Petitioner by serving the counsel of record using the following email addresses:

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Dated: July 15, 2020

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/ Stephen Gillen /

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