

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

RAVIN CROSSBOWS, LLC,
Petitioner

v.

MCP IP, LLC,
Patent Owner

Case IPR2024-00522
Patent No. 8,683,989

PATENT OWNER'S PRELIMINARY RESPONSE

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EXHIBITS

- EX2001 US Provisional Patent Application No. 61/247,473
(“’473*Provisional*”)
- EX2002 Inside Archery Bow Report – 2009 Mission Menace
(“*Menace*”)
- EX2003 Inside Archery Bow Report – Mathews McPherson Series
Monster (“*Monster*”)
- EX2004 US Patent Application No. 12/248,467 as filed (“ ’467 *Appl.*”)
- EX2005 US Patent Publication No. 2010/0089375 (“ ’375 *Pub.*”)
- EX2006 Declaration of Mathew McPherson
- EX2007 Declaration of Charles F. Reinholtz, PhD
- EX2008 Declaration of Jeffrey A. Ozanne
- EX2009 MCP’s Responses to Ravin Crossbow, LLC’s First Set of
Interrogatories, Case No. 3:23-CV-00142-JDP.

I. INTRODUCTION

The Board should deny institution of Ravin's Petition for *inter partes* review of U.S. Patent No. 8,683,989 (the "'989 Patent"). In these proceedings, the petitioner bears the burden of proof from the start to show at least a reasonable likelihood that it will prevail in establishing unpatentability. Ravin's Petition fails to meet this standard.

Ravin's Petition presents a single, flawed, invalidity ground and relies on a primary reference that it knew, or should have known, was not prior art to the '989 Patent. Almost two months before filing its Petition, Ravin had possession of a magazine article (EX2002) demonstrating that the inventor, Mathew McPherson, had produced a bow embodying the '989 Patent at least six months before the priority date of its primary reference.

In addition, neither of the two references asserted in the Petition disclose a fundamental feature of Mr. McPherson's invention – a compound bow cam with a "reverse wrapped" power cable. Instead, the Petition presents a Frankenstein cam relying on teachings from the '989 Patent itself rather than any concept disclosed in its references. In fact, the power cable wrap directions on both of Ravin's references are the same. The Petition relies on a fundamental misunderstanding of compound bow construction and logical leaps. In short, Petitioner has not made the necessary showing.

II. THE '989 PATENT – The “Reverse Wrap”

Mathew McPherson has a long history of bow design. He has been building and designing compound archery bows since 1970 when he was in junior high school. The '989 Patent describes a unique design for a compound bow cam that Mr. McPherson developed in 2008. EX2006, para. 6-8. Mr. McPherson's design places the terminal post that connects the take up end of a power cable to an outer edge of bow's cam, *see, e.g.*, EX1001, FIG. 1 (element 32), while traditional cam designs position a corresponding terminal near the center of the cam. *See, e.g.*, EX1004, FIG. 4D (element 56); Pet., 20-21. As the '989 Patent describes:

[T]he location of the terminal post 32 and the shape of the capstan 30 result in the power cable 24 wrapping around the capstan 30 in a direction away from the axle 18 before terminating on the post 32. In some embodiments, the cable wraps around the capstan 30 in a direction opposite the direction of cam 10 rotation as the bowstring 20 is drawn. As shown in FIG. 1, the cam 10 will rotate in a first rotational direction 76 (e.g. clockwise) when drawn, and the power cable 24 wraps around the capstan 30 and extends toward the terminal post 32 in a second rotational direction 78 (e.g. counter-clockwise) that is opposite the first rotational direction as the power cable 24 is traversed

from the elongate straight portion 28 toward the terminal portion 36.

EX1001, 4:33-45.

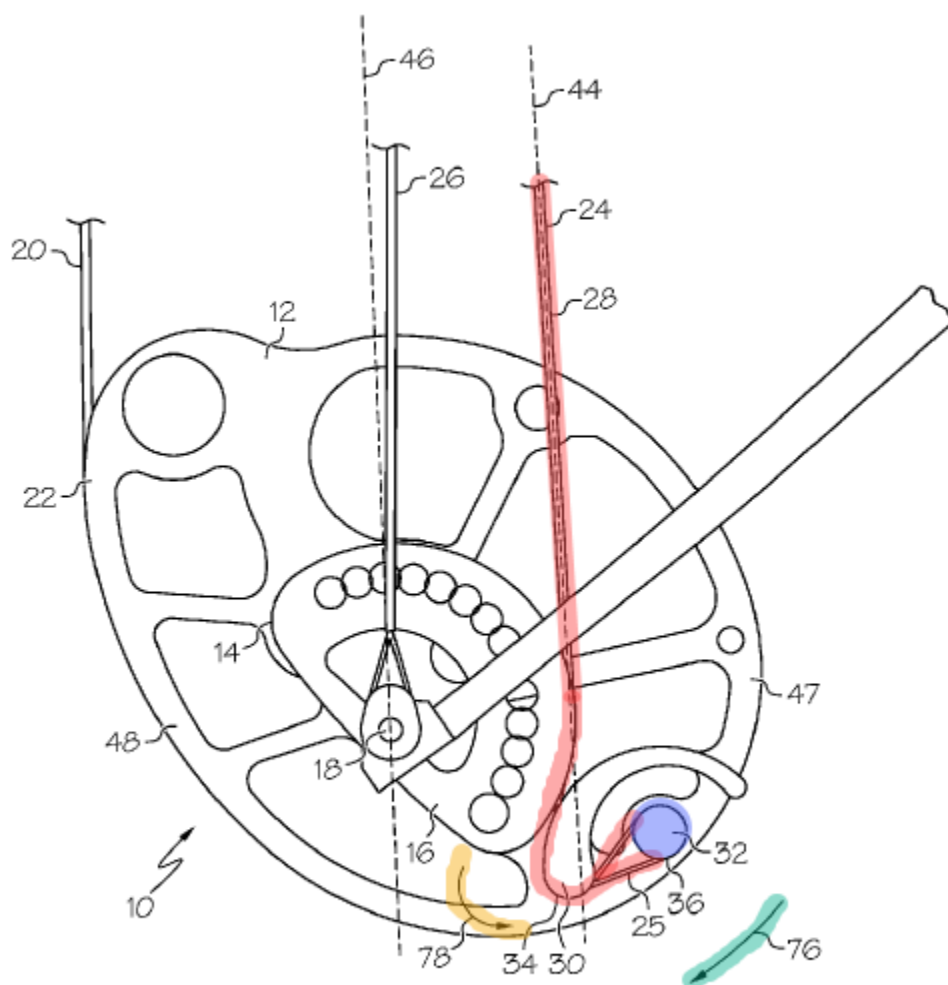


FIG. 1

EX1001, FIG. 1 (annotated).

This new design can be referred to as a “reverse wrap,” i.e., the power cable take up end is wrapped in a direction that is reverse (opposite) to the draw rotation of the cam. In addition to the power cable wrap direction itself, this general “reverse

wrap” concept resulted in several features recited in the independent claims¹ that made Mr. McPherson’s cam design unique among the prior art of the time.

- In the brace position, the “reverse wrap” positions the terminal post and the cam’s axle on opposite sides of a plane formed by the straight portion of the power cable that extends toward the opposite bow cam. *See, e.g.*, EX1001, col. 4:46-48, FIG. 1, claim 1.
- The “reverse wrap” positions the cam’s capstan closer to the power cable than the terminal post when the bow is drawn, thus, providing “added draw capability.” *See, e.g.*, EX1001, col. 5:15-21, FIGS. 2, 5, claims 11, 19.
- The “reverse wrap” positions the terminal further from the bow’s axle plane than the capstan. *See, e.g.*, EX1001, col. 4:57-59, claim 12.

III. DARLINGTON DOES NOT QUALIFY AS PRIOR ART

The Petition should be denied because Darlington (EX1004), the primary reference in Ravin’s sole ground of unpatentability, does not qualify as prior art. Darlington’s earliest priority date is June 30, 2009. *Id.*, 5; EX1004. MCP’s inventor

¹ Claims 1, 11, 12, and 19.

Mathew McPherson designed, built, and commercialized the invention claimed by each and every Challenged Claim in 2008, before Darlington's §102(e) (pre-AIA) date. *See*, EX2006.

A reference is prior art under 35 U.S.C. §102(e) only if filed before the date of "the invention by the [Patent Owner]." 35 U.S.C. § 102(e) (Pre-AIA); *see, e.g., Sequenom v. Leland Stanford Junior Univ.*, No. IPR2013-00390, at 5 (P.T.A.B. Nov. 25, 2014); *Dynamic Drinkware LLC v. Nat'l Graphics, Inc.*, No. IPR2013-00131, at 7 (P.T.A.B. Sept. 12, 2014) *aff'd*, 800 F.3d 1375 (Fed. Cir. 2015).

To establish actual reduction to practice a Patent Owner may antedate and thereby remove a reference as prior art by showing, before the reference's 102(e) priority date, (1) that [the inventor] constructed an embodiment or performed a process that met all the limitations of the invention; and (2) that the invention works for its intended purpose. *Drinkware*, No. IPR2013-00131 at 12 (citing *Cooper v. Goldfarb*, 154 F.3d 1321, 1327 (Fed. Cir. 1998)); *Roofr, Inc. v. Eagle View Tech., Inc.*, No. IPR2023-00437, Paper 14, at 9 (P.T.A.B. August 1, 2023) (Denying institution where Patent Owner "provide[d] evidence and argument to support its claim of an actual reduction to practice" before the priority date of an asserted reference.). "When the issue of priority concerns the antedating of a reference, the [patentee] is required to demonstrate, with sufficient documentation, that the applicant was in possession of the later-claimed invention before the effective date

of the reference.” *In re Steed*, 802 F.3d 1311, 1316 (Fed. Cir. 2015). For some inventions, “a mere construction of them is all that is necessary to constitute reduction to practice.” *In re Asahi/America Inc.*, 68 F.3d 442, 445 (Fed. Cir. 1995) (quoting *Sachs v. Wadsworth*, 48 F.2d 928, 929 (C.C.P.A. 1931)). Recognition of the invention does not need to exactly mirror the eventual claim language, as “the prior inventor does not need to ‘establish that he recognized the invention in the same terms as those recited’ in the patent claims.” *Fox Grp., Inc. v. Cree, Inc.*, 700 F.3d 1300, 1305 (Fed. Cir. 2012) (quoting *Dow Chem. Co. v. Astro-Valcour, Inc.*, 267 F.3d 1334, 1341 (Fed.Cir.2001)). Showing reduction to practice renders moot the inquiry into the substance and timing of conception because an “alleged prior inventor would need to prove conception only if the alleged prior inventor had not successfully reduced the invention to practice before the critical date of the patent at issue.” *Fox*, 700 F.3d at 1304.

In evaluating the sufficiency of evidence proving prior reduction to practice, courts and tribunals must use the “rule of reason” in evaluating “all pertinent evidence” to determine the credibility of the inventor’s story. *See, e.g., Nintendo Am., Inc. v. iLife Techs., Inc.*, No. IPR2015-00112, at 31 (P.T.A.B. Apr. 29, 2016) (quoting *Medichem, S.A. v. Rolabo, S.L.*, 437 F.3d 1157, 1170 (Fed. Cir. 2006)); *Cooper*, 154 F.3d at 1330. To corroborate a reduction to practice, “it is not necessary to produce an actual over-the-shoulder observer. Rather, sufficient circumstantial

evidence of an independent nature can satisfy the corroboration requirement.” *Cooper*, 154 F.3d at 1330; *see also Fleming v. Escort Inc.*, 774 F.3d 1371, 1377 (Fed. Cir. 2014) (the corroboration requirement “is a flexible, rule-of-reason demand for independent evidence that, as a whole, makes credible the testimony of the purported prior inventor with regard to conception and reduction to practice of the invention as claimed.”). Moreover, “an actual reduction to practice does not require corroboration for every factual issue contested by the parties.” *Cooper*, 154 F.3d at 1330 (citing *Ethicon, Inc. v. U.S. Surgical Corp.*, 135 F.3d 1456, 1464 (Fed. Cir. 1998)); *Mann v. Werner*, 52 C.C.P.A. 1578, 1583 (1965)). Courts apply a “deferential standard of review” in assessing the credibility of non-inventor testimony and “clear error review” of documentary evidence. *See Medichem*, 437 F.3d at 1172. Finally, “actual reduction to practice ... is a question of law, and depends on the evidence that the invention, as conceived, was shown to work for its intended purpose, before the date of the adverse reference.” *In re Steed*, 802 F.3d 1311, 1316 (Fed. Cir. 2015).

Ravin has not and cannot demonstrate that it is likely to succeed in proving that at least one claim of the '989 Patent is unpatentable (35 U.S.C. § 314(a)), because the sole ground presented in the Petition relies on a primary reference that is not prior art. In *Roofr*, the Board denied institution because it found Patent Owner’s evidence sufficient to show that one independent claim was embodied by

an actual reduction to practice, *see Roofr, Inc.*, No. IPR2023-00437 at 9 (“While it is true that Patent Owner’s evidence specifically refers to claim 10, we are not persuaded that this undermines Patent Owner’s arguments.”). Here, MCP provides inventor testimony and third-party corroborating evidence to show that ***all of the Challenged Claims*** were embodied by two of Mr. McPherson’s bows that were launched before Darlington’s priority date. Moreover, before filing its Petition Ravin knew that MCP had reduced the technology of the ’989 Patent to practice at least as early as the last quarter of 2008 (EX2009, 7-8, 9-10), yet it failed to address such in the Petition.

A. Mathew McPherson designed and built two operational bows before Darlington’s priority date that are embodied in the Challenged Claims of the ’989 patent.

Before June 30, 2009, Mr. McPherson designed and built the Mission Menace and Mathews McPherson Series Monster bows. EX2006, para. 8. The inventions embodied in the two bows were reduced to practice and worked for their intended purposes, as evidenced by the fact that both bows were commercially produced and were “tested for proper operation before being approved for production.” EX2006, para. 15, 23. Moreover, Mathews Archery was so certain that the bows worked that they sent both bows to *Inside Archery* magazine for review soon after each product was launched. EX2006, para. 9, 17. The Menace bow was reviewed in the December 2008 issue of *Inside Archery* and the Monster bow was reviewed in the

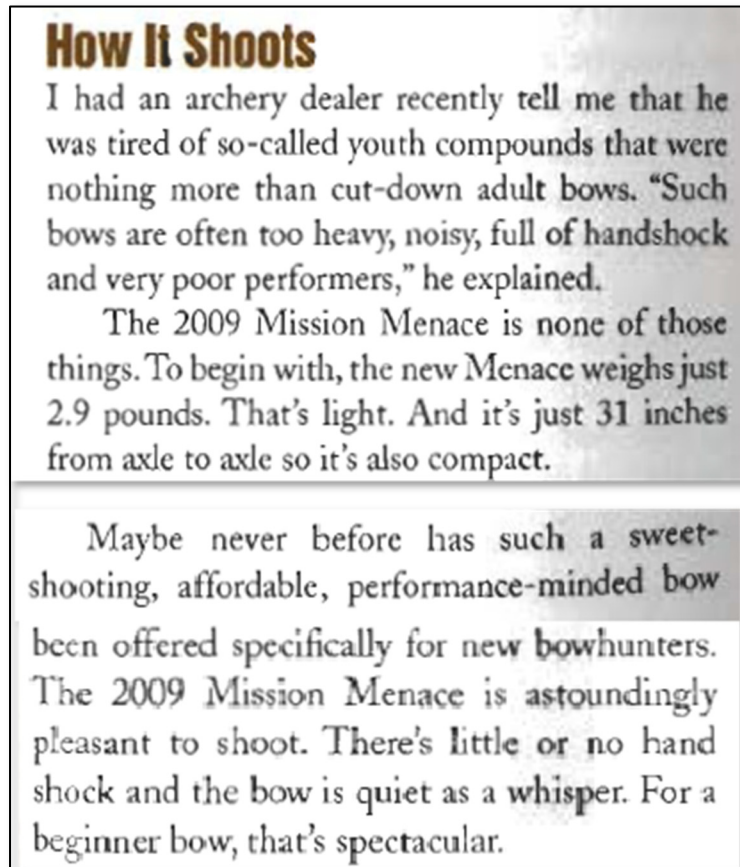
June 2009 issue. EX2002; EX2003. Together these two articles provide third-party evidence corroborating that the inventions, as recited in the Challenged Claims, were reduced to practice before Darlington's priority date and that the inventions operated for their intended purposes. Among other things, the design freedom offered by the "reverse wrap" had enabled Mr. McPherson to design the Mission Menace bow to work over a wide range of draw lengths and the Mathews McPherson Series Monster bow to achieve a high arrow speed. EX2002; EX2003; EX2006, para. 7.

Menace Bow

The Mission Menace bow was designed and built in 2008 and the product was launched in October 2008. EX2006, para. 9. Matthews Archery shipped one of the Mission Menace bows to Bill Krenz at *Inside Archery* magazine for a Bow Report article. *Id.* This article, from the magazine's December 2008 issue, is evidence that the Mission Menace existed in late 2008, and illustrates how the bow looked and describes how it shot. EX2008, paras. 4-5.

In the article, Krenz praises the Mission Menace's performance leaving no doubt that the inventions embodied in the bow did indeed work for their intended purposes. EX2002, 42-43. "The 2009 Mission Menace is a remarkable bow system that offers new, and particularly young and growing, bowhunters an inviting and versatile bow that can indeed grow with them from their very first days afield well

into their adult bowhunting.” EX2002, 42. The Mission Menace had “an unprecedented 14-inch, youth-to-adult draw-length range.” *Id.*



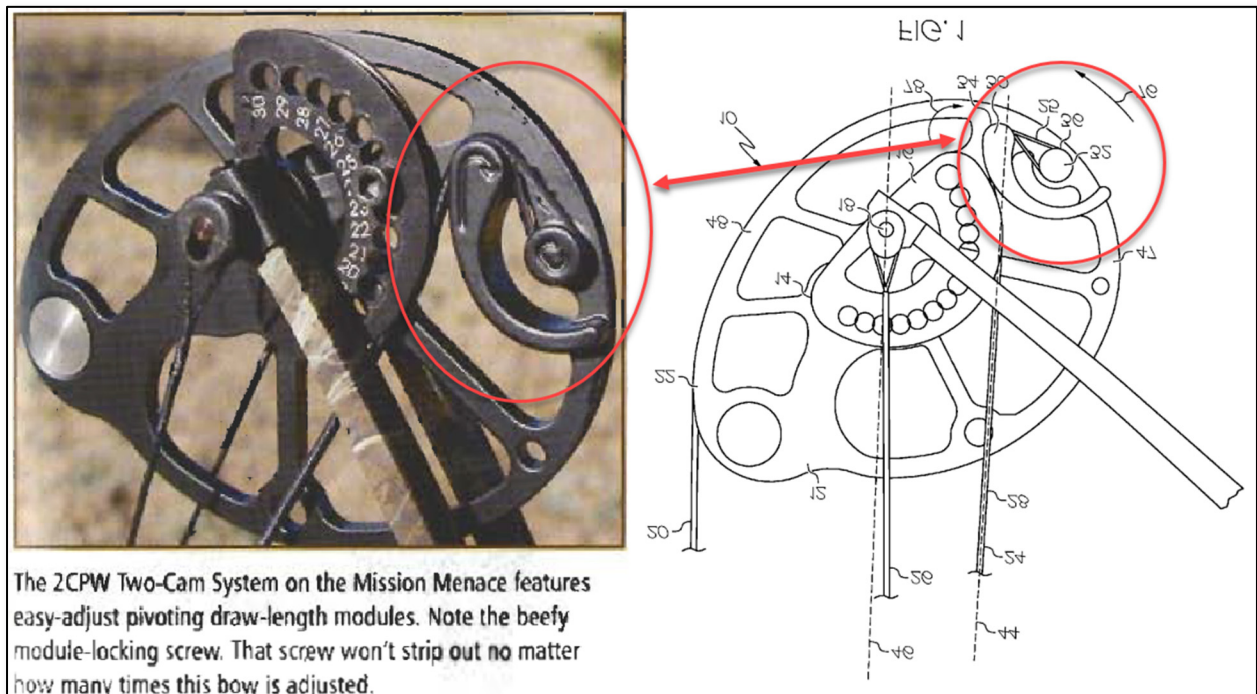
EX2002, 42-43.

The Menace article also includes a chart listing arrow speeds for several of the Menace bow’s adjustable draw lengths and draw weights further demonstrating that the bow operated properly.

Arrow Speed				
2009 Mission Menace				
DRAW LENGTH	DRAW WEIGHT	ARROW	ARROW WEIGHT	ARROW SPEED
20 INCHES	38 POUNDS	19" 1816 ALUMINUM	326 GRAINS	145 FPS
		21" 1714 ALUMINUM	264 GRAINS	155 FPS
25 INCHES	48 POUNDS	24" 1916 ALUMINUM	396 GRAINS	191 FPS
		24" 1816 ALUMINUM	376 GRAINS	196 FPS
30 INCHES	52 POUNDS	28" 400 CARBON	391 GRAINS	248 FPS
		28" 400 CARBON	366 GRAINS	255 FPS

EX2002, Arrow Speed Chart.

As will be shown in the following sub-sections, the cams of the Menace bow that Krenz reviewed are nearly identical to the cams depicted in FIGS. 1-3 of the '989 Patent. EX2007, para. 35. FIG. 1 of the '989 Patent is reproduced below alongside a photo of the Menace bow cam from Krenz's Bow Report article. The figure is rotated to match the orientation of the cam in the photo. The photo shows that the Menace bow had the same "reverse wrap" power cable configuration as described in the '989 Patent.



EX2002, 43; EX1001, FIG. 1.

Monster Bow

The Monster bow was designed and built in 2008. EX2006, para. 16. The Monster bow's first sales occurred in early 2009. *Id.* Matthews Archery also shipped one of the Monster bows to Bill Krenz for a Bow Report. EX2006, para. 17. This article, from the magazine's June 2009 issue, is evidence that the Monster bow existed before June 2009, and illustrates how the bow looked and describes how it shot. EX2008, paras. 4-5.

Inside Archery likewise praises McPherson's Monster bow. EX2003, 30-31. "The McPherson Series Monster is one of the fastest, most efficient dual-cam compound bows ever produced." EX2003, 30. Krenz continues: "At the shot, the

Mathews Monster is surprisingly quiet and shock-free.” *Id.* “Arrow speed with the Mathews Monster is simply astonishing. Just a few years ago archery engineers would have told you that it wasn’t possible to build a bow this fast while being this shootable.” EX2003, 30-31. *Inside Archery*’s praise confirms that the inventions embodied in the Monster, like the Menace, worked for their intended purpose.

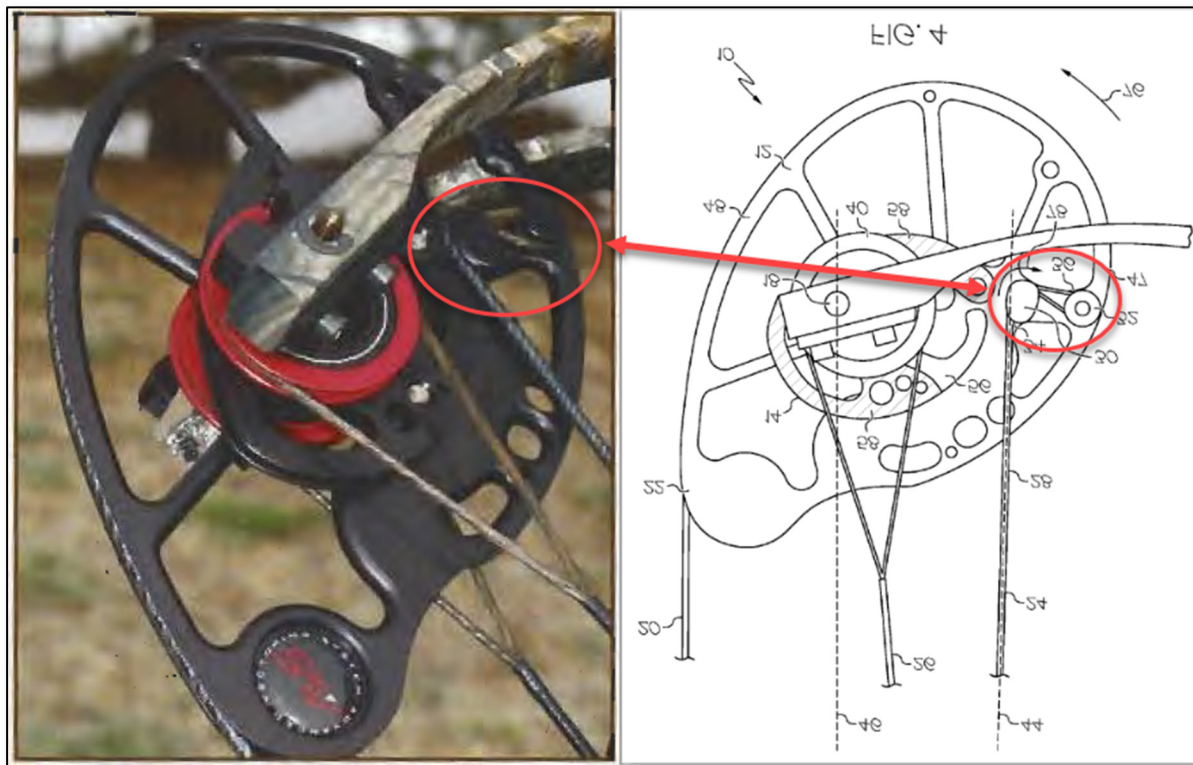
Arrow Speed				
2009 Mathews Monster set at 29 inches (by factory) and adjusted to 70 pounds				
28-INCH ARROWS	SHAFT: GRAINS/IN	ARROW: TOTAL WEIGHT	KINETIC ENERGY	ARROW SPEED
EASTON XX78 ALLOY 2512	10.3	448 GR.	92.0	304 FPS
EASTON FULL METAL JACKET 400	10.2	426 GR.	91.5	311 FPS
CARBON EXPRESS ARAMID KV 350	9.8	415 GR.	90.9	314 FPS
CARBON TECH WHITETAIL 65/80	9.5	411 GR.	91.1	316 FPS
CARBON EXPRESS MAXIMA HUNTER 350	8.9	398 GR.	90.5	320 FPS
EASTON ST AXIS N-FUSED 400	9.0	392 GR.	90.3	322 FPS
BEMAN ICS HUNTER ELITE 400	8.4	390 GR.	90.3	323 FPS
GOLD TIP XT HUNTER 55/75	8.2	385 GR.	89.8	324 FPS
PSE RADIAL X WEAVE HUNTER 300	8.1	376 GR.	89.8	328 FPS
EASTON LIGHTSPEED 400	7.4	363 GR.	89.4	333 FPS
GOLD TIP ULTRALIGHT PRO 400	7.4	361 GR.	89.4	334 FPS
CARBON TECH CHEETAH 400	6.4	346 GR.	88.8	340 FPS
HIGH COUNTRY SPEED PRO MAX	5.5	303 GR.	88.2	362 FPS

Bow weighed with an Easton Bow Force Digital Scale. All tests conducted with a Spot-Hogg Hooter Shooter Portable Shooting Machine and a Competition Electronics Pro Chronograph.

EX2003, Arrow Speed Chart.

As will be shown in the following sub-sections, the cams of the Monster bow that Krenz reviewed are nearly identical to the cams depicted in FIGS. 4-6 of the '989 Patent. EX2007, para. 37. FIG. 4 of the '989 Patent is reproduced below

alongside a photo of the Monster bow cam from Krenz’s Bow Report article. The figure is rotated to match the orientation of the cam in the photo. The photo shows that the Monster bow had the same “reverse wrap” power cable configuration as described in the ’989 Patent.



EX2003, 30; EX1001, FIG. 4.

B. The Menace bow embodies all the limitations of claims 1, 3-4, 8-14, and 16-19 of the '989 patent.

The Menace article is third-party evidence showing that Mr. McPherson's Mission Menace bow was reduced to practice and worked for its intended purposes. The following discussion demonstrates that the Mission Menace bow, as described in the Menace article, met all the limitations of each of claims 1, 3-4, 8-

14, and 16-19. *Cooper*, 154 F.3d at 1327; *In re Asahi/America Inc.*, 68 F.3d at 445.

1. Claim 1

Claim 1(Pre): “An archery bow having a brace condition and a drawn condition, the archery bow comprising:”

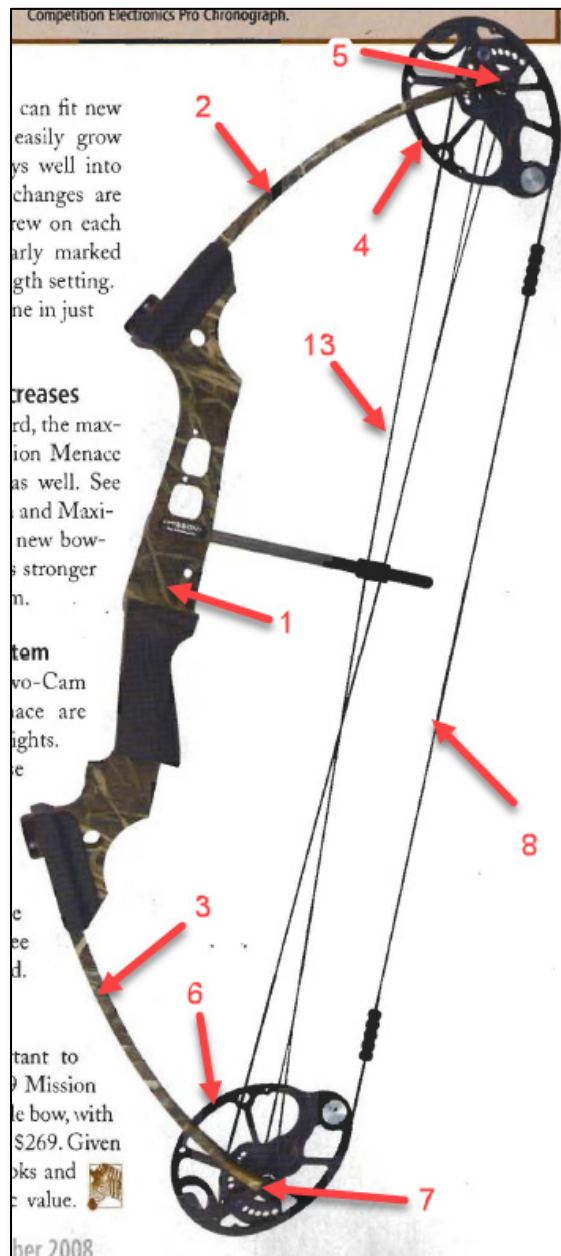
Claim 1(a): “a riser;”

Claim 1(b): “a first limb and second limb supported by the riser;”

Claim 1(c): “a first rotatable member supported by the first limb on a first axle, a second rotatable member supported by the second limb on a second axle,”

Claim 1(e): “a drawstring extending between the first rotatable member and the second rotatable member;”

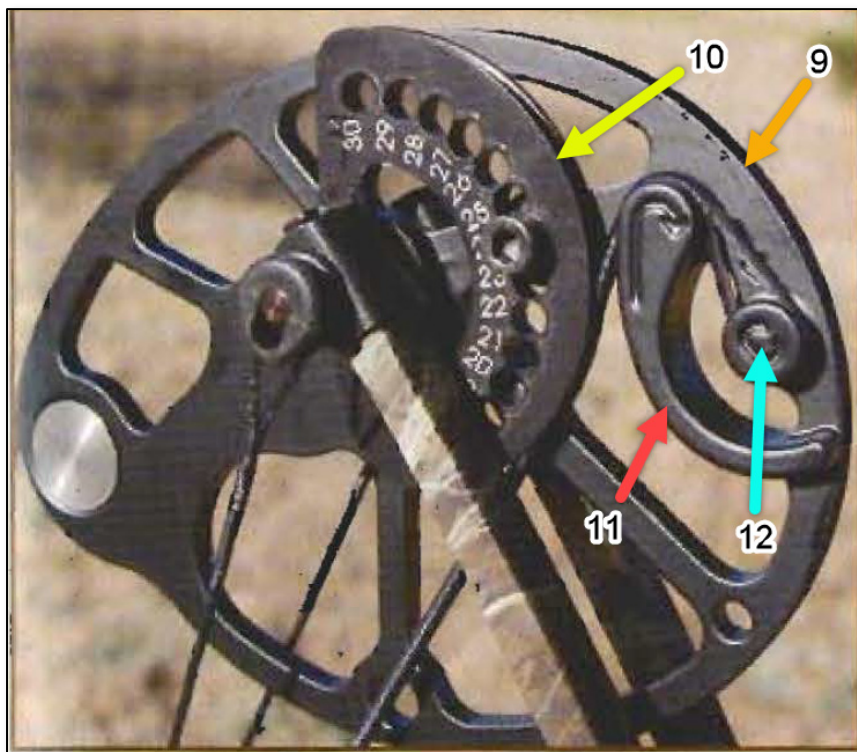
The Menace article includes a photograph of the full Mission Menace bow in a brace condition with a riser (1) supporting both a first (2) and a second limb (3). EX2002, 43. Each limb supports a rotating cam (4, 6) on a respective axle (5, 7), with a drawstring (8) extending between the two cams. *Id.*



EX2002, 43 (annotated).

Claim 1(d): “the first rotatable member comprising a drawstring track, a cam track, a capstan and a terminal, wherein said drawstring track is oriented in a first cam plane and said cam track is oriented in a second cam plane offset from said first cam plane,”

The Menace article includes a closeup photograph of one of the Mission Menace bow's cams (reproduced and annotated below). The drawstring track (9), cam track (10), capstan (11), and terminal (12) are each clearly visible in the photograph. The photograph further shows that the cam track offset in a separate plane from the drawstring track.

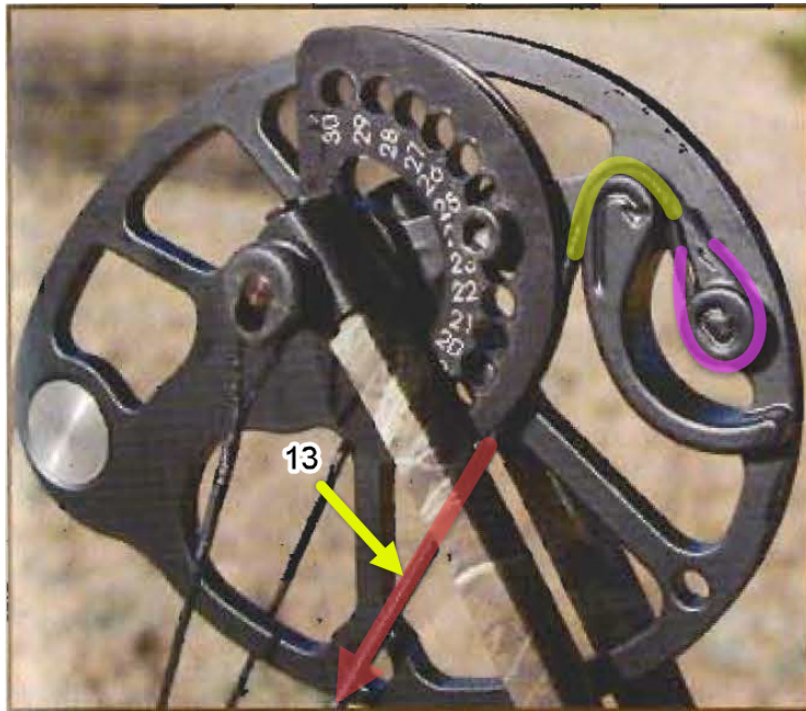


EX2002, 43 (annotated).

Claim 1(f): “a power cable attached to said terminal and extending toward the second limb, said power cable comprising an elongate straight portion located near said first rotatable member, a capstan portion in contact with said capstan and a terminal portion in contact with said terminal;”

The cam photograph from the Menace article is annotated below to highlight claim limitation 1(f). The Mission Menace bow had a power cable (13). The power

cable had a straight portion (red portion) extending from one cam towards the other cam. A portion of the Mission Menace bow's power cable wrapped around the capstan (yellow portion) and a portion that loops around the terminal (purple portion).



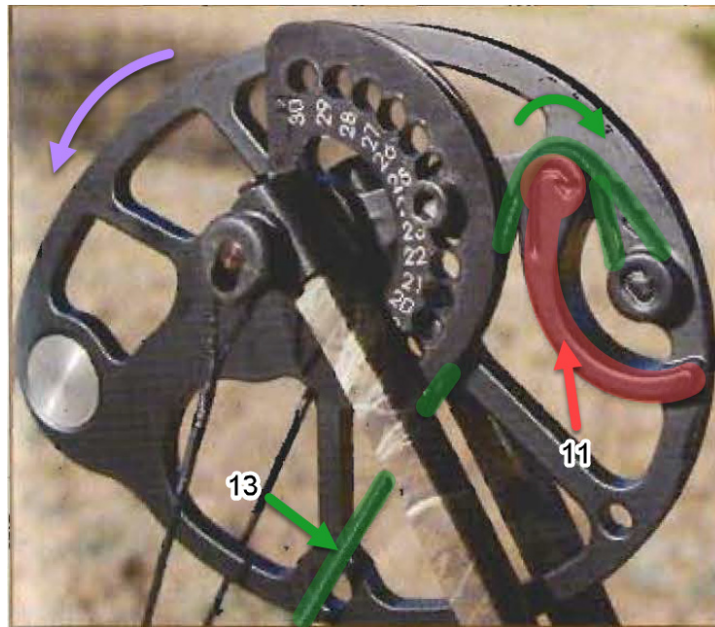
EX2002, 43 (annotated).

Claim 1(g): “wherein, in the brace condition, the power cable wraps around the capstan in a first rotational direction as the power cable is traversed from the elongate straight portion to the terminal portion; and”

Claim 1(h): “when the bow is drawn from the brace condition, the first rotatable member rotates in a second rotational direction that is opposite the first rotational direction ...”

The cam photograph from the Menace article is annotated below to highlight claim limitations 1(g) and 1(h). As shown, the Mission Menace bow power cable

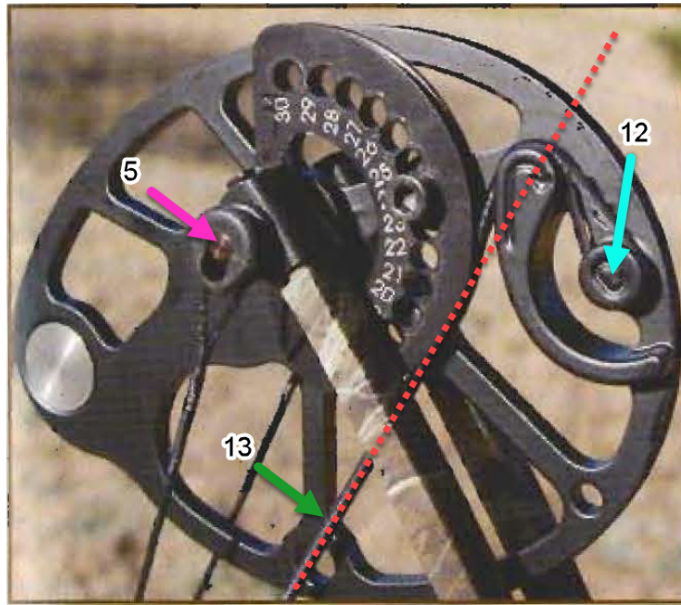
(13) wrapped from left to right around the capstan (11), as shown by the green arrow, while the cam rotated in the opposite direction, indicated by the purple arrow, when the bow is drawn from the brace condition. EX2007, para. 43.



EX2002, 43 (annotated).

Claim 1(i): “wherein, in the brace condition, the elongate straight portion defines a plane, wherein said first axle and said terminal are located on opposite sides of said plane.”

The cam photograph from the Menace article is annotated below to highlight claim limitation 1(i). The photograph of the Mission Menace bow shows the cam in the brace condition and has been annotated with a dashed line approximating the plane formed by the straight portion of the power cable (13). EX2007, para. 44. The axle (5) and the terminal (12) are on opposite sides of the plane formed by the straight portion of the power cable (13).



EX2002, 43 (annotated).

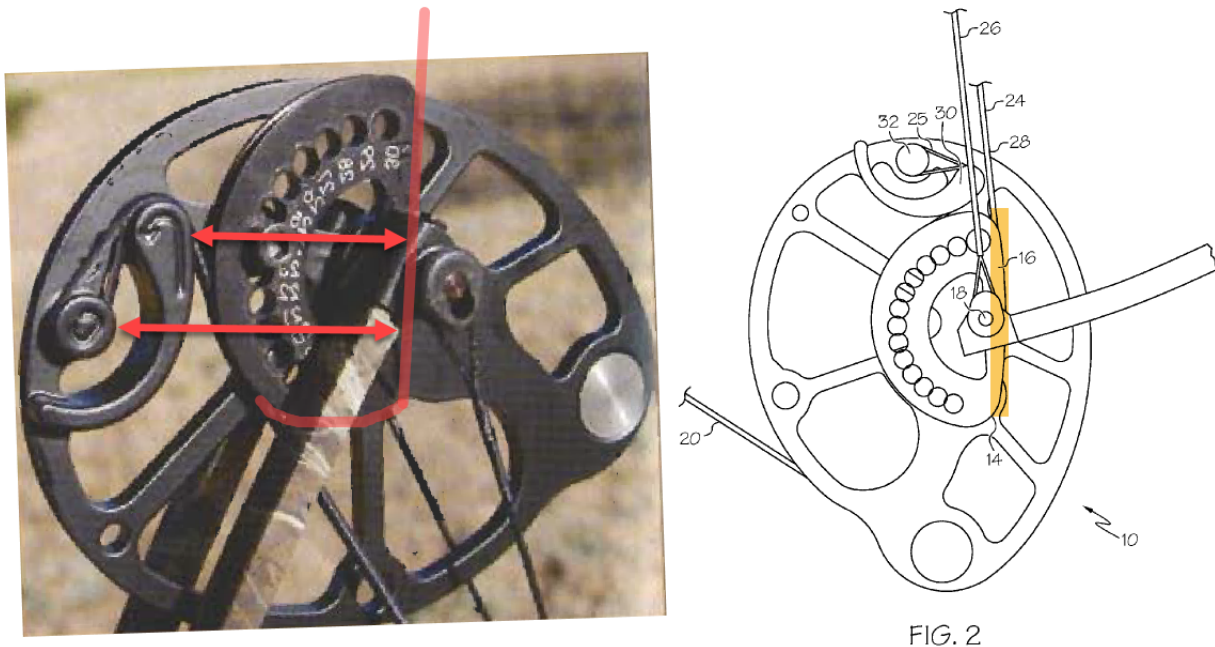
2. Claim 11

Independent claim 11 is similar to claim 1 except for the following limitation:

Claim 11(i): “wherein, in the drawn condition, the capstan is located closer to the elongate straight portion [of the power cable] than the terminal.”

The Menace article does not show the cams of the Mission Menace bow in the drawn orientation. But a POSITA would understand how the bow operates and that, on the Mission Menace cams, the capstan was closer to the straight portion of the power cable than the terminal when the bow is drawn. EX2007, paras. 45-46. The draw only rotates the cam, but the relative position of components on the cam remains the same. *Id.* This fact is shown by the annotated figures below. As noted above, the Mission Menace cams were nearly identical to the cams depicted in FIGS

1-3 of the '989 Patent. EX2007, para. 35. FIG. 2 from the '989 Patent depicting a cam in the drawn position (EX1001, col. 5:8) is shown alongside a rotated version of the Mission Menace cam. When the bow is drawn the power cable rests in the flat portion of the cam module, shown in orange in FIG. 2 of the '989 Patent. The Mission Menace had the same shape cam module, and when drawn, the power cable would rest in the same flat portion, as shown in annotated red lines. The terminal is further from this straight portion of the power cable than the capstan, similar to that depicted in FIG. 2 of the '989 Patent.



EX2002, 43 (annotated); EX1001, FIG. 2 (annotated).

3. Claim 12

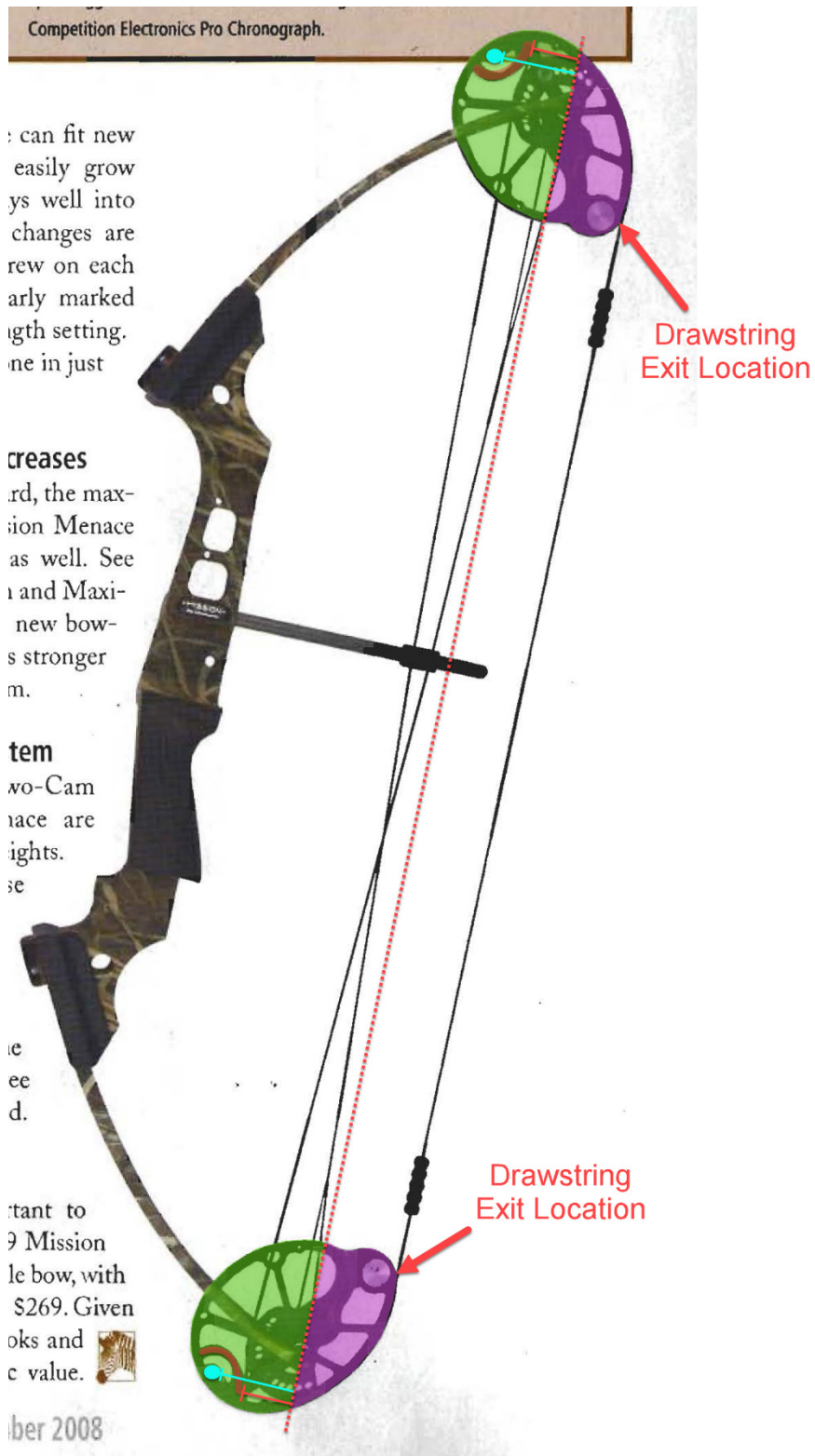
Independent claim 12 is similar to claim 1 except for the following limitations:

Claim 12(c): “... a first rotatable member supported by the first limb on a first axle, a second rotatable member supported by the second limb on a second axle, the first axle and the second axle defining an axle plane,”

Claim 12(e): “a drawstring extending between the first rotatable member and the second rotatable member, the drawstring extending from the first rotatable member at an exit location,”

Claim 12(g): “wherein, in the brace condition, the axle plane divides the first rotatable member to a first part and a second part, the capstan and the terminal located in the first part, the drawstring exit location located in the second part, and”

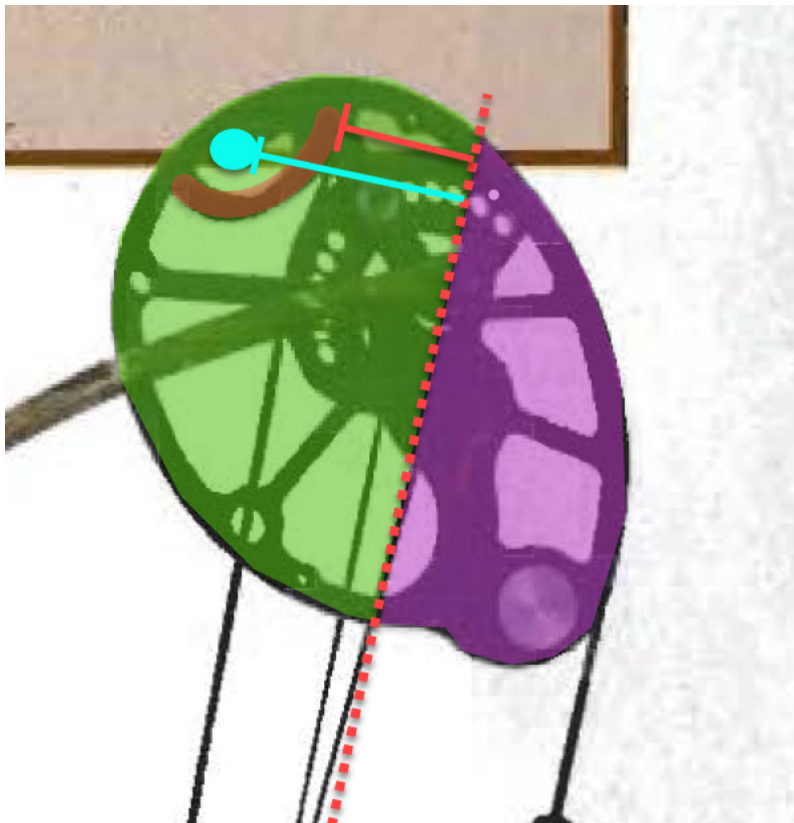
See supra, claim 1(c). The full bow photograph from Menace article is annotated below with a dashed red line showing the axle plane defined by the two axles and to show the drawstring exit location on each cam. The axle plane of the Mission Menace bow divides each cam into a first part (green) and a second part (purple). The capstan and terminal were located in the green first part, and the drawstring exit was located on the purple second part.



EX2002, 43 (annotated).

Claim 12(h): “a distance between the terminal and the axle plane is greater than a distance between the capstan and the axle plane, and”

See infra, claim 3. Furthermore, a close in view of the upper cam from the full bow photograph in the Menace article is annotated below illustrating the relative distances between the axle plane (dashed red line) of the Mission Menace bow and the terminal (blue) and the capstan (red). The distance between the terminal and the axle plane was greater than the distance between the capstan and the axle plane.



EX2002, 43 (annotated).

4. Claim 19

Independent claim 19 is similar to claim 1 except for the following limitation:

Claim 19(c): “... a first rotatable member supported by the first limb on a first axle, a second rotatable member supported by the second limb on a second axle, the first axle and the second axle defining an axle plane,”

See supra, claim 12(c).

Claim 19(e): “a drawstring extending between the first rotatable member and the second rotatable member, the drawstring extending from the first rotatable member at an exit location,”

See supra, claim 12(e).

Claim 19(g): “wherein, in the brace condition, the axle plane divides the first rotatable member to a first part and a second part, the capstan and the terminal located in the first part, the drawstring exit location located in the second part, and”

See supra, claim 12(g).

Claim 19(h): “a distance between the terminal and the axle plane is greater than a distance between the capstan and the axle plane, and”

See supra, claim 12(h).

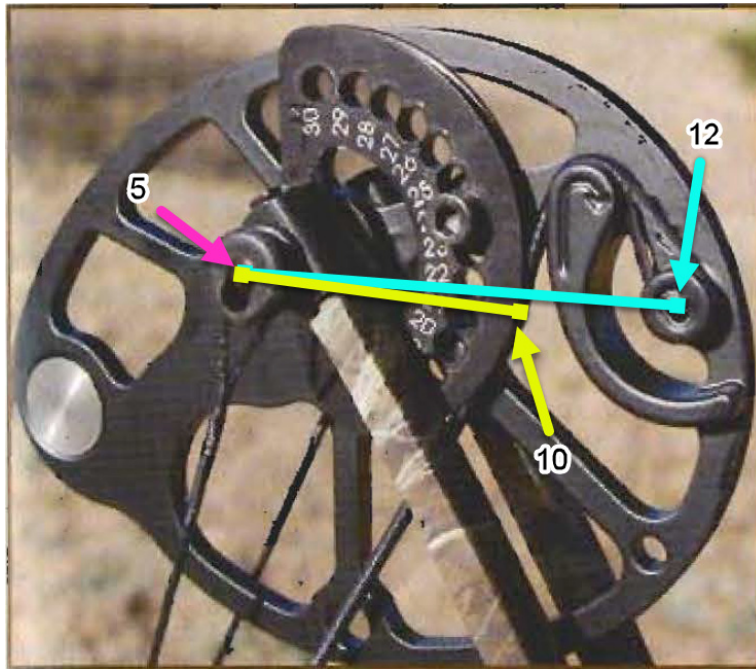
Claim 19(i): “wherein, in the drawn condition, said power cable comprises an elongate straight portion located near said first rotatable member, the capstan located closer to the elongate straight portion than the terminal.”

See supra, claim 11(i).

5. Claims 3 & 14

Claim 3: “The archery bow of claim 1[14], wherein a distance between the first axle and the terminal is greater than a distance between the first axle and the cam track.”

The cam photograph from the Menace article is annotated below to highlight the limitations of claims 3 and 14. On the Mission Menace bow the distance (blue) between the terminal (12) and the axle (5) was greater than the distance (yellow) between the cam track (10) and the axle (5).



EX2002, 43 (annotated).

6. Claims 4 & 16

Claim 4: “The archery bow of claim 1, wherein at least a portion of said cam track comprises a module that is attached to said first rotatable member.”

Claim 16: “The archery bow of claim 12, wherein at least a portion of said cam track comprises a module that is attached to said first rotatable member, the module being removable or repositionable.”

The Mission Menace bow included an adjustable/rotatable cam module for changing draw-length. EX2002, 43 (“Draw-length changes are a snap. Remove one

locking crew on each cam and simply pivot the clearly marked modules to the desired draw-length setting.”).



The 2CPW Two-Cam System on the Mission Menace features easy-adjust pivoting draw-length modules. Note the beefy module-locking screw. That screw won't strip out no matter how many times this bow is adjusted.

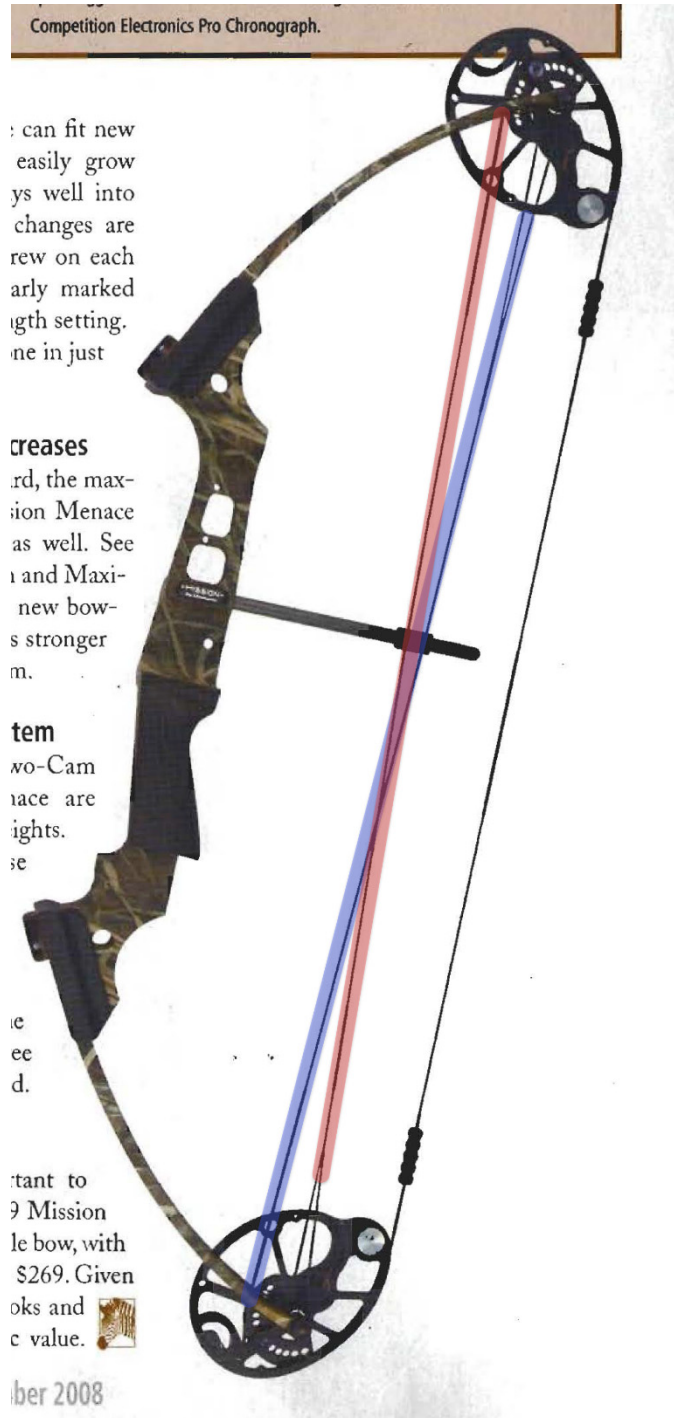
EX2002, 43 (annotated).

7. Claim 8

Claim 8(a): “The archery bow of claim 1, further comprising a second power cable, said second rotatable member comprising a second cam track, a second capstan and a second terminal, the second power cable attached to said second terminal and extending toward the first limb, said second power cable comprising a second elongate straight portion located near said second rotatable member, a second capstan portion in contact with said second capstan and a second terminal portion in contact with said second terminal;”

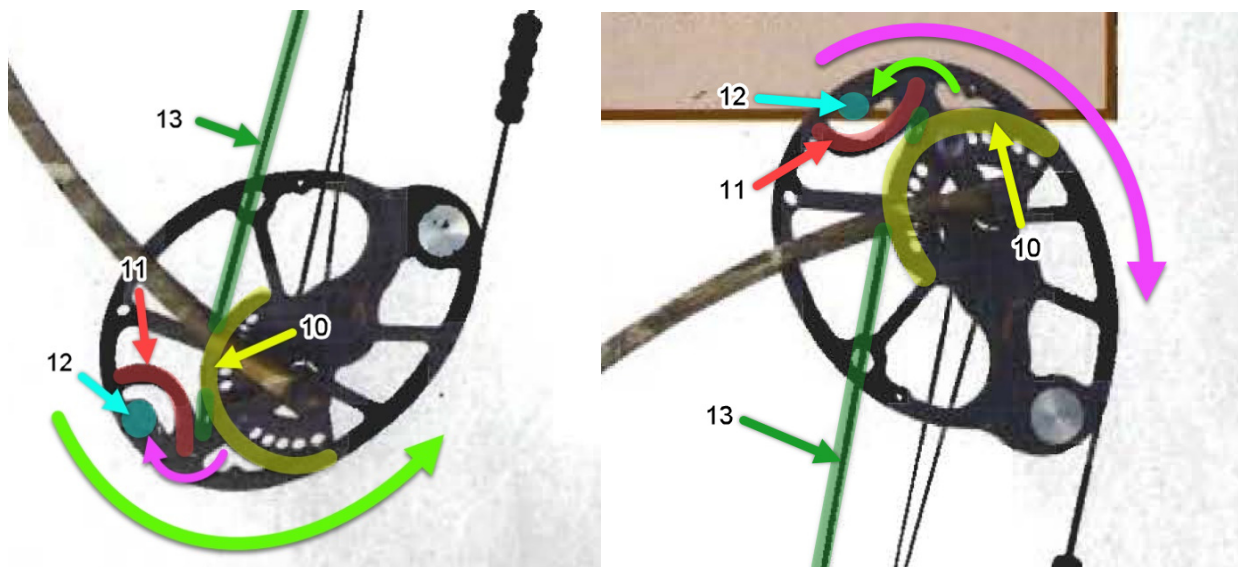
The Mission Menace bow included two operating cams. EX2002, 43 (“The 2CPW Two-Cam System on the Mission Menace features easy-adjust pivoting

draw-length modules.”). The full bow photograph from the Menace article is annotated below to highlight the first and second power cables.



EX2002, 43 (annotated).

The upper and lower cams of the full bow photograph from the Menace article are enlarged and annotated below to show the components of each cam. Both cams of the Mission Menace bow had a cam track (10), a capstan (11), and a terminal (12). On both cams a respective power cable (13) was attached to the terminal (12) and had an elongate straight portion that extends towards the opposite limb. A portion of each power cable (13) wrapped around the capstan (11) and a portion that loops around the terminal (12). The green arrows in the image indicate a first rotational direction, and the purple arrows indicate a second rotational direction opposite the first rotational direction.

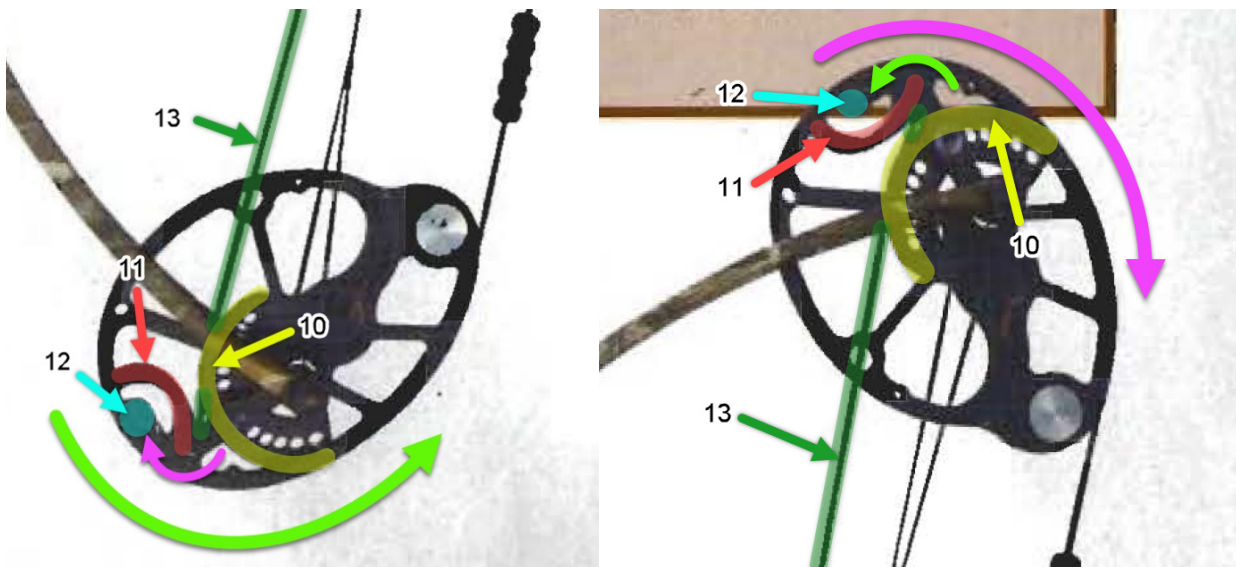


EX2002, 43 (annotated).

Claim 8(b): “wherein, in the brace condition, the second power cable wraps around the second capstan in the second rotational direction as the second power cable is traversed from the second elongate straight portion to the second terminal portion; and”

Claim 8(c): “when the bow is drawn from the brace condition, the second rotatable member rotates in the first rotational direction.”

On the Mission Menace bow the power cables on each cam wrapped around the respective capstan in an opposite direction to the rotational direction of the cam when the bow was drawn. The upper and lower cams of the full bow photograph from the Menace article are enlarged and annotated below to respective power cable wrap directions and cam rotation directions. The lower cam (*e.g.*, second cam) rotates, when drawn, in a first rotational direction (green) and its power cable wraps in a second rotational direction (purple). The upper cam (*e.g.*, first cam) rotates, when drawn, in the second rotational direction (purple) and its power cable wraps in the first rotational direction (green).



EX2002, 43 (annotated).

8. Claims 9 & 18

Claim 9: “The archery bow of claim 8[17], wherein said second rotatable member comprises a mirror image of said first rotatable member.”

The cams of the Mission Menace were mirror images of each other. As shown in the images below, the upper and lower cams of the Mission Menace were mirror images of each other. EX2007, para. 58.

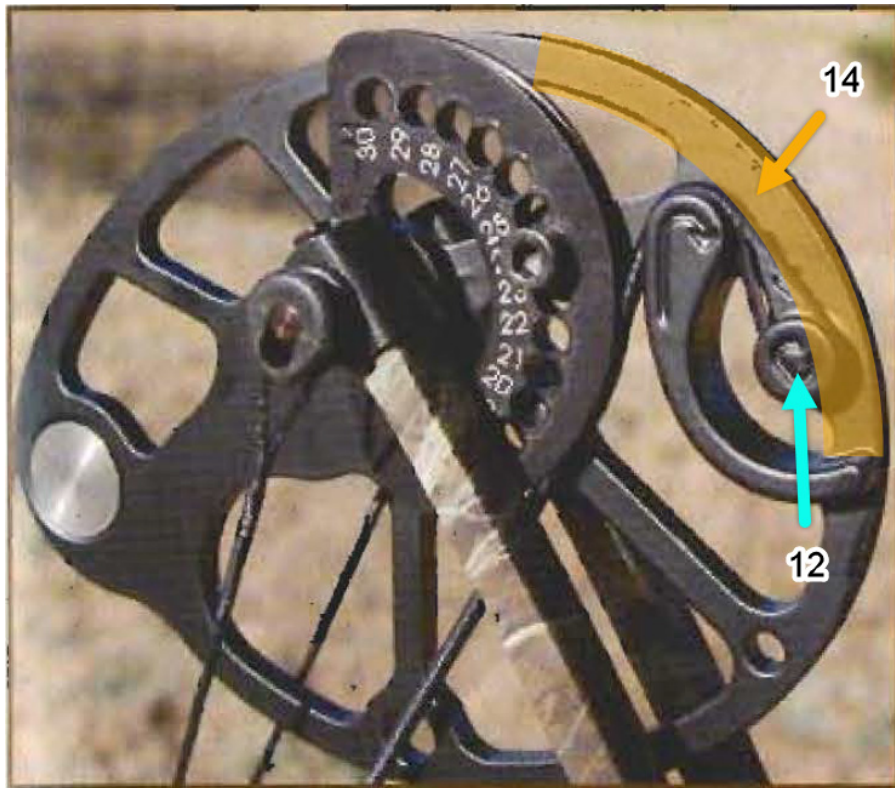


EX2002, 43 (annotated).

9. Claim 10

Claim 10: “The archery bow of claim 1, wherein said first rotatable member comprises an outer peripheral structure, said terminal located on said outer peripheral structure.”

As shown in the annotated photograph below, the terminal (12) of the Mission Menace bow as located on an outer peripheral structure (14) of the cam.

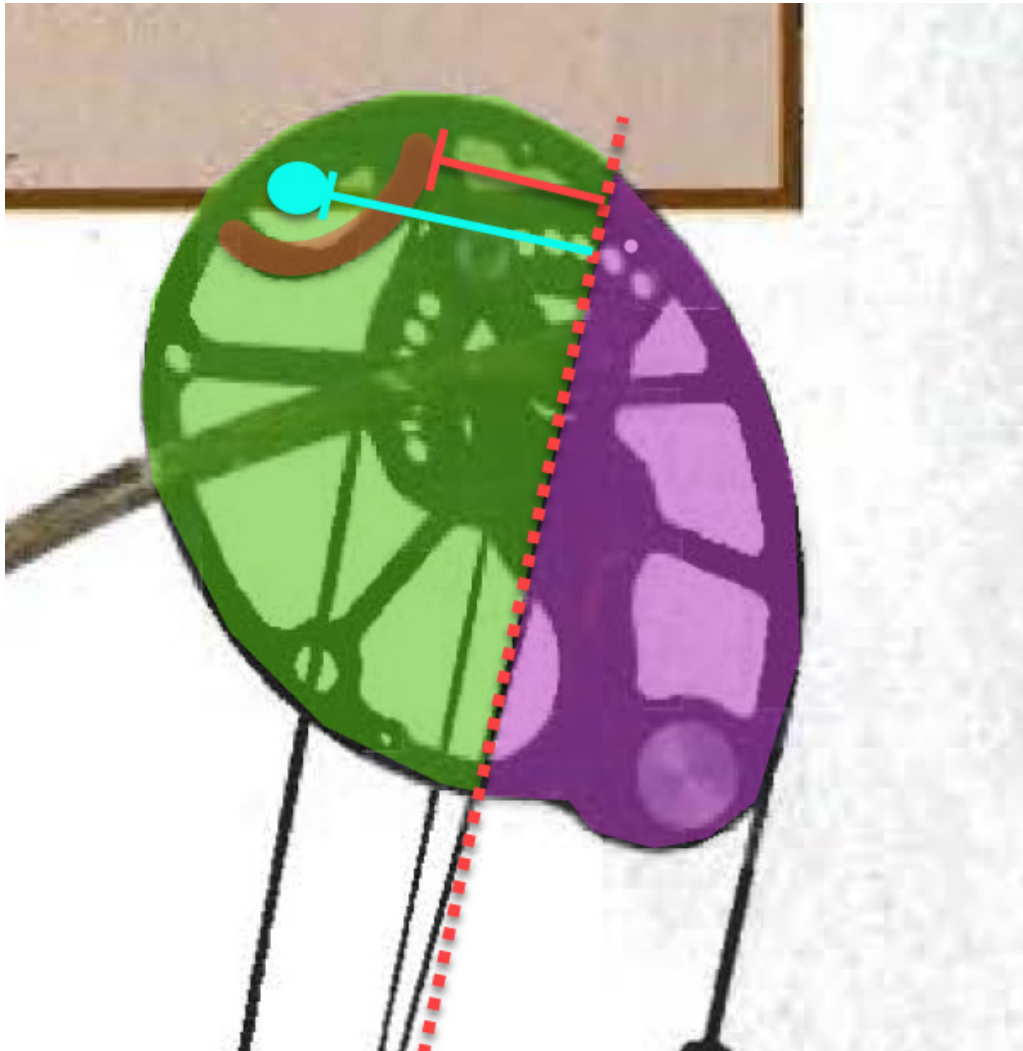


EX2002, 43 (annotated).

10. Claim 13

Claim 13: “The archery bow of claim 12, wherein said distance between the terminal and the axle plane is measured orthogonal to said axle plane, and said distance between the capstan and the axle plane is measured orthogonal to said axle plane.”

The upper cam in full bow photograph from the Mission Menace article is enlarged and annotated below to illustrate this feature. The dashed red line represents the axle plane of the Mission Menace. *See supra*, claim 12(h). Lines are drawn to show relative distances from the terminal (blue) and the capstan (red) to the axle plane, as measured approximately orthogonally to the axle plane line. The drawing demonstrates that the orthogonal distance between the terminal and the axle plane was greater than the orthogonal distance between the capstan and the axle plane.



EX2002, 43 (annotated).

11. Claim 17

“The archery bow of claim 12, further comprising a second power cable, said second rotatable member comprising a second cam track, a second capstan and a second terminal, the second power cable attached to said second terminal and extending toward the first limb, said second power cable comprising a second capstan portion in contact with said second capstan and a second terminal portion in contact with said second terminal, the drawstring extending from the second rotatable member at a second exit location;”

“wherein, in the brace condition, the axle plane divides the second rotatable member to a first part and a second part, the second capstan and the second

terminal located in the first part, the second drawstring exit location located in the second part, and”

“a distance between the second terminal and the axle plane is greater than a distance between the second capstan and the axle plane.”

See supra, claim 12(c), 12(e), 12(g), & 12(h).

C. The Monster bow embodies all the limitations of claims 1, 2, 4, 7, 12, and 15 of the '989 patent.

The Monster article is third-party evidence showing that the Mr. McPherson's Monster bow was reduced to practice and worked for its intended purposes. The following discussion demonstrates that the Monster bow, as described in the Monster article, met all the limitations of each of claims 1, 2, 4, 7, 12, and 15.. *Cooper*, 154 F.3d at 1327; *In re Asahi/America Inc.*, 68 F.3d at 445.

1. Claim 1

Claim 1(Pre): “An archery bow having a brace condition and a drawn condition, the archery bow comprising:”

Claim 1(a): “a riser;”

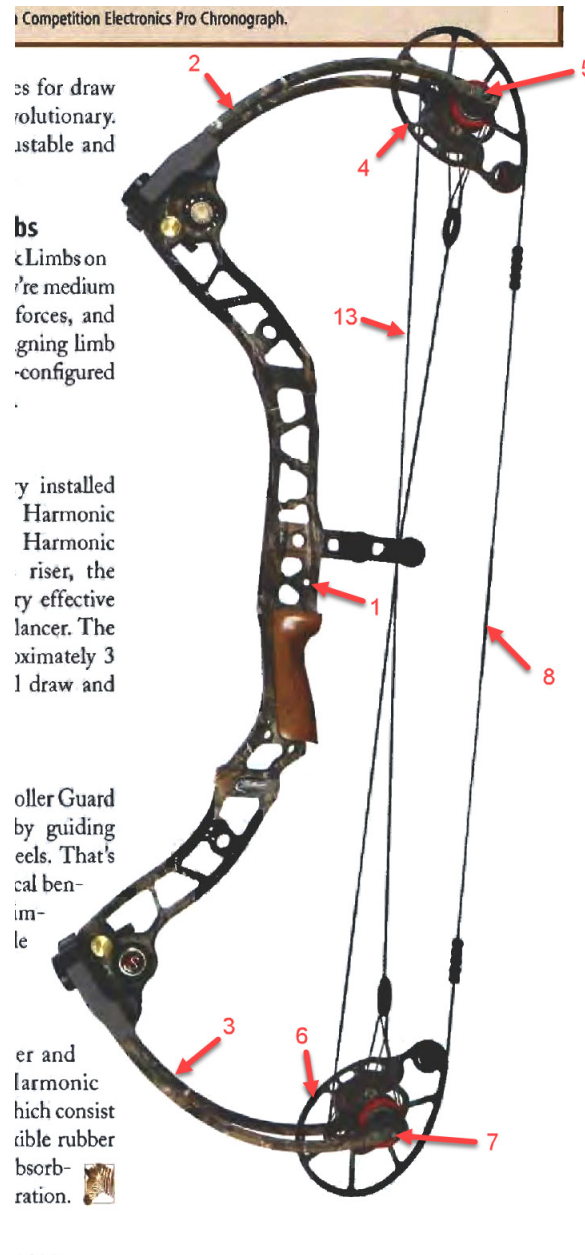
Claim 1(b): “a first limb and second limb supported by the riser;”

Claim 1(c): “a first rotatable member supported by the first limb on a first axle, a second rotatable member supported by the second limb on a second axle,”

Claim 1(e): “a drawstring extending between the first rotatable member and the second rotatable member;”

The Monster article includes a photograph of the full Monster bow in a brace condition with a riser (1) supporting both a first (2) and a second limb (3). EX2003,

31. Each limb supports a rotating cam (4, 6) on a respective axle (5, 7), with a drawstring (8) extending between the two cams.

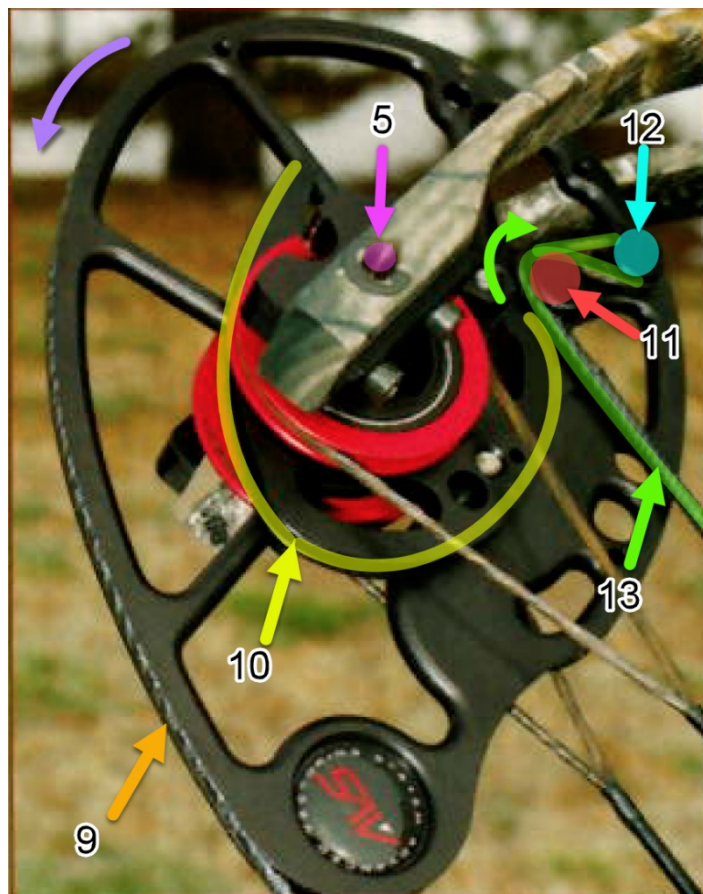


EX2003, 31 (annotated).

Claim 1(d): “the first rotatable member comprising a drawstring track, a cam track, a capstan and a terminal, wherein said drawstring track is oriented in a first

cam plane and said cam track is oriented in a second cam plane offset from said first cam plane,”

The Monster article includes a closeup photograph of one of the Monster bow's cams (reproduced and annotated below). The drawstring track (9), cam track (10), capstan (11), and terminal (12) are each clearly visible in the photograph. The photograph further shows that the cam track offset in a separate plane from the drawstring track.

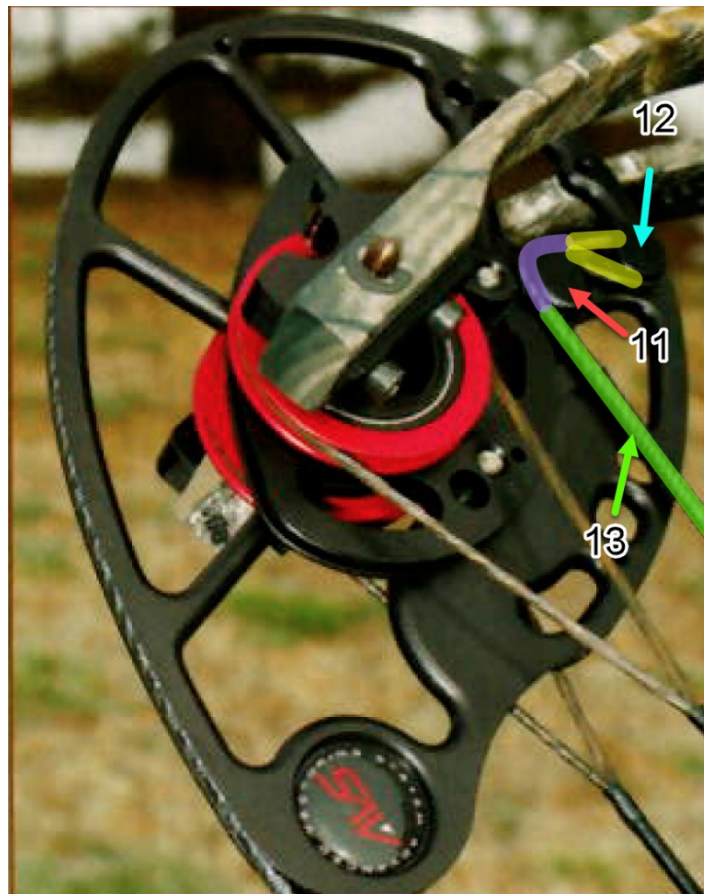


EX2003, 30 (annotated).

Claim 1(f): “a power cable attached to said terminal and extending toward the second limb, said power cable comprising an elongate straight portion located

near said first rotatable member, a capstan portion in contact with said capstan and a terminal portion in contact with said terminal;

The cam photograph from the Monster article is annotated below to highlight claim limitation 1(f). The Monster bow had a power cable (13). The power cable (13) had a straight portion (green) extending from one cam towards the other cam. A portion (purple) of the Monster bow's power cable wrapped around the capstan (11) and a portion (yellow) that loops around the terminal (12).

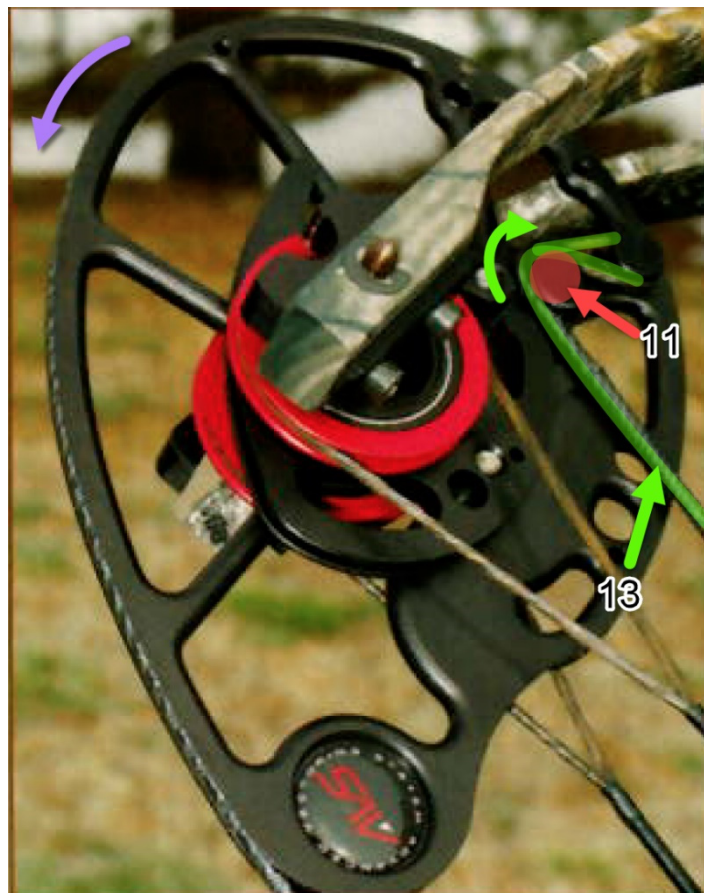


EX2003, 30 (annotated).

Claim 1(g): “wherein, in the brace condition, the power cable wraps around the capstan in a first rotational direction as the power cable is traversed from the elongate straight portion to the terminal portion; and”

Claim 1(h): “when the bow is drawn from the brace condition, the first rotatable member rotates in a second rotational direction that is opposite the first rotational direction ...”

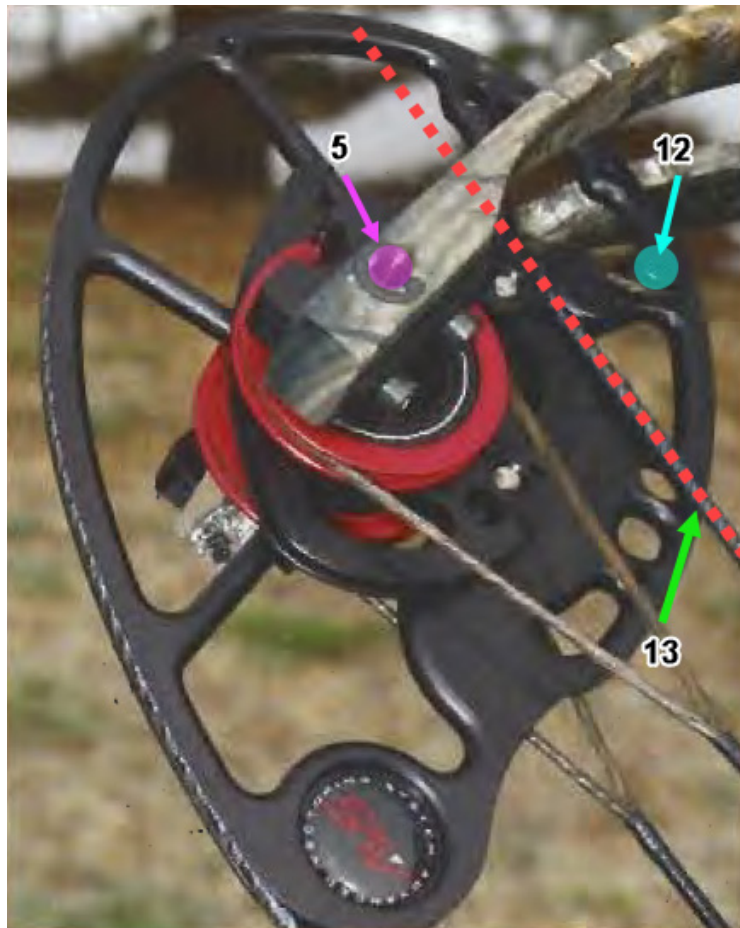
The cam photograph from the Monster article is annotated below to highlight claim limitations 1(g) and 1(h). As shown, the Monster bow power cable (13) wrapped from left to right around the capstan (11), as indicated by the green arrow, while the cam rotated in the opposite direction, indicated by the purple arrow, when the bow is drawn from the brace condition. EX2007, para. 65.



EX2003, 30 (annotated).

Claim 1(i): “wherein, in the brace condition, the elongate straight portion defines a plane, wherein said first axle and said terminal are located on opposite sides of said plane.”

The cam photograph from the Monster article is annotated below to highlight claim limitation 1(i). The photograph of the Monster bow shows the cam in the brace condition and has been annotated with a dashed line approximating the plane formed by the straight portion of the power cable (13). EX2007, para. 66. The axle (5) and the terminal (12) are on opposite sides of the plane formed by the straight portion of the power cable (13).



EX2003, 30 (annotated).

2. Claim 12

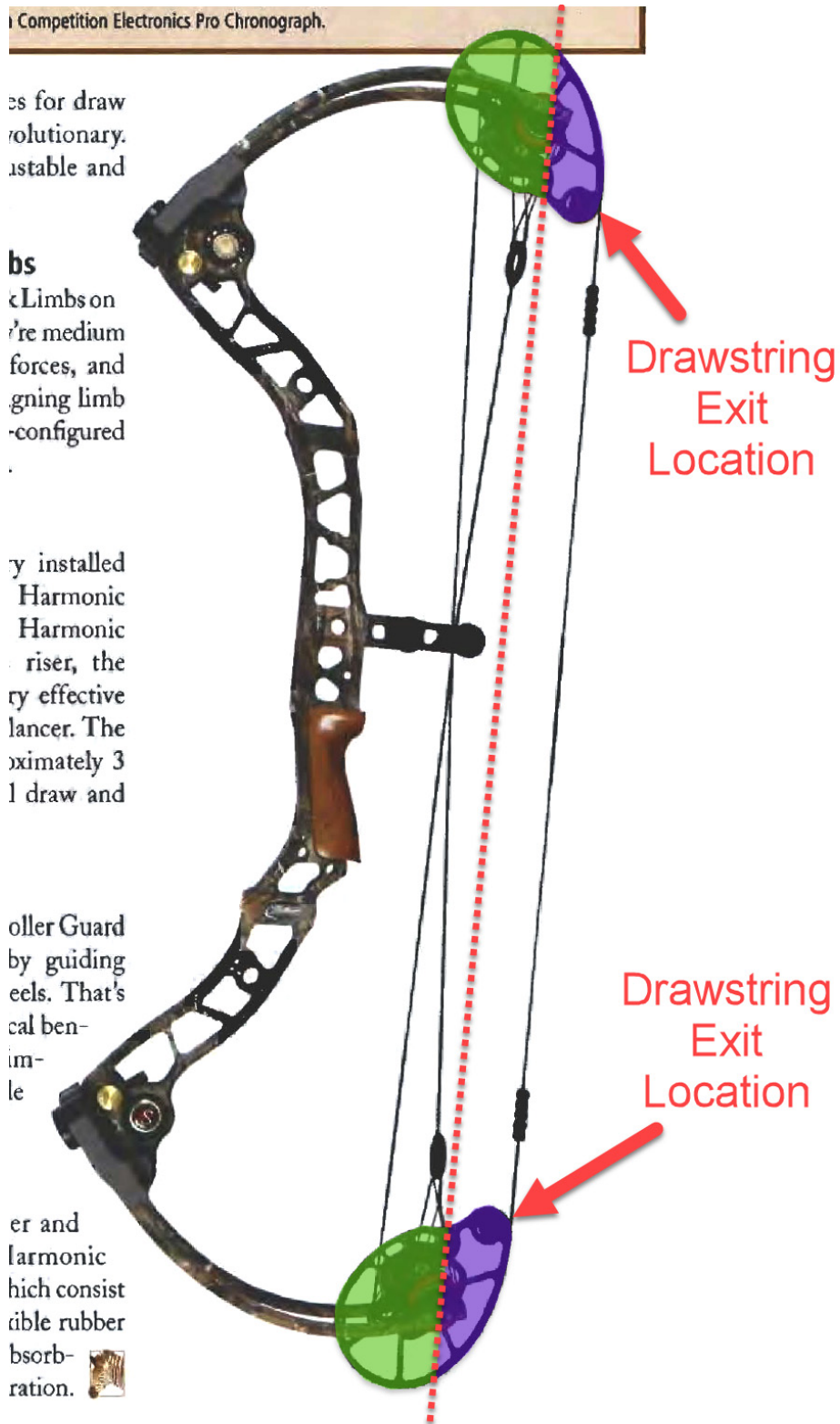
Independent claim 12 is similar to claim 1 except for the following limitations:

Claim 12(c): “... a first rotatable member supported by the first limb on a first axle, a second rotatable member supported by the second limb on a second axle, the first axle and the second axle defining an axle plane,”

Claim 12(e): “a drawstring extending between the first rotatable member and the second rotatable member, the drawstring extending from the first rotatable member at an exit location,”

Claim 12(g): “wherein, in the brace condition, the axle plane divides the first rotatable member to a first part and a second part, the capstan and the terminal located in the first part, the drawstring exit location located in the second part, and”

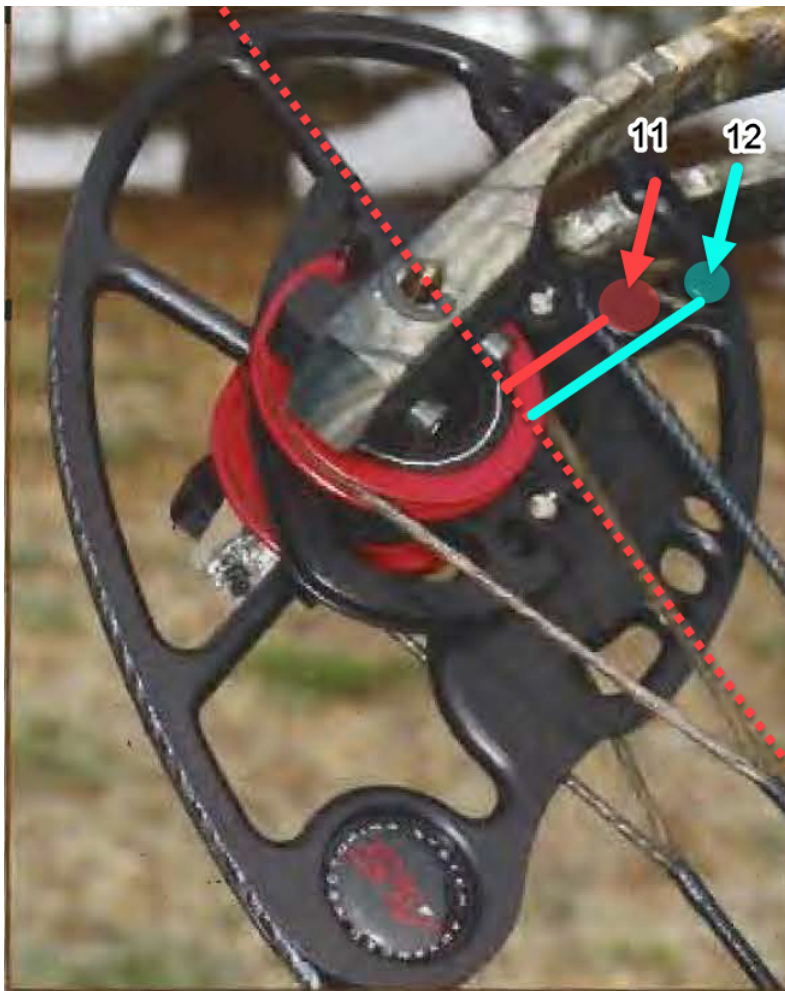
See supra, claim 1(c). The full bow photograph from Monster article is annotated below with a dashed red line showing the axle plane defined by the two axles and to show the drawstring exit location on each cam. The axle plane of the Monster bow divides each cam into a first part (green) and a second part (purple). The capstan and terminal were in the green first part, and the drawstring exit was in the purple second part.



EX2003, 31 (annotated).

Claim 12(h): “a distance between the terminal and the axle plane is greater than a distance between the capstan and the axle plane, and”

Furthermore, the cam photograph from the Monster article is annotated below illustrating the relative distances between the axle plane (dashed red line) of the Monster bow and the terminal (12, blue) and the capstan (11, red). The distance (blue) between the terminal (12) and the axle plane was greater than the distance (red) between the capstan (11) and the axle plane.

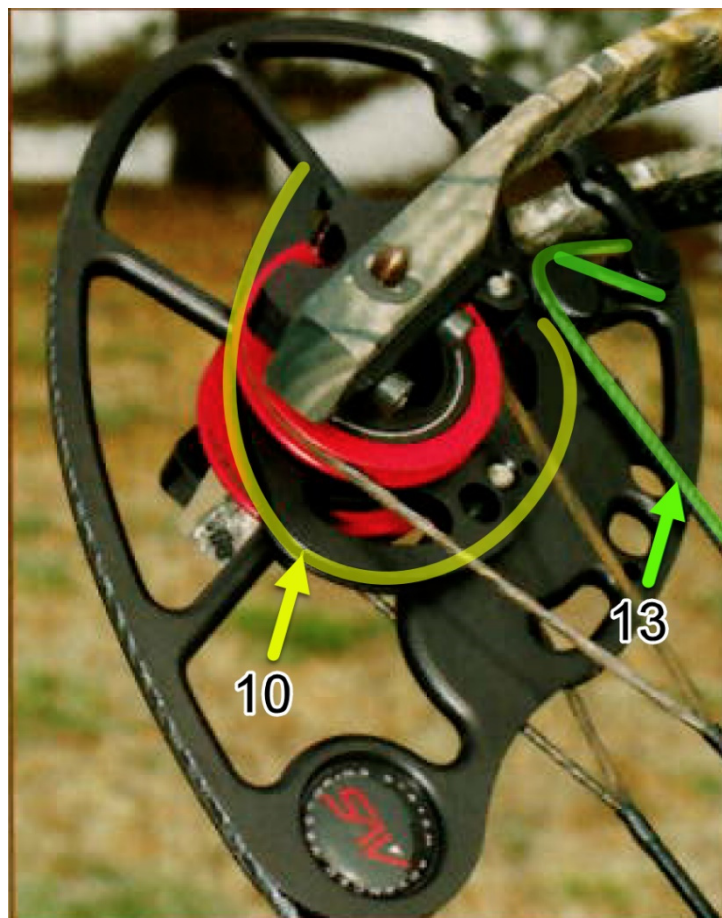


EX2003, 30 (annotated).

3. Claims 2 & 15

Claim 2[15]: “The archery bow of claim 1[12], wherein, in the brace condition, the power cable is not oriented in said cam track.”

The cam photograph from the Monster article is annotated below to highlight the limitations of claims 2 and 15. On the Monster bow the power cable (13) did not rest in the cam track (10) while in the brace condition. This can be seen by the fact that the power cable does not change direction in the photograph after looping around the capstan but extends along a straight path towards the opposite cam. EX2007, para. 70.



EX2003, 30 (annotated).

4. Claims 4 & 7

Claim 4: “The archery bow of claim 1, wherein at least a portion of said cam track comprises a module that is attached to said first rotatable member.”

Claim 7: “The archery bow of claim 4, wherein said module is interchangeable with a second module having a different shape.”

The Monster bow included a cam module for changing draw-length. EX2003, 31 (“[The Monster] utilizes interchangeable modules for draw length adjustment.”).

One interchangeable cam module is highlighted in the cam photograph below.



EX2004, 30 (annotated).

D. Ravin was aware of the Menace Article and prior reduction to practice two months before filing its Petition.

Before filing its Petition Ravin knew, or should have known, that the Mission Menace and Monster bows were reduced to practice as early as “the last quarter of 2008.” EX2009, 8. MCP disclosed this information to Ravin in its response to Ravin’s first set of interrogatories in the co-pending litigation (*MCP IP, LLC v. Ravin Crossbows, LLC*, Case No. 3:23-cv-00142-JDP (WDWI)), which was served on January 5, 2024 – almost two months before Ravin filed its Petition. EX2009, 7-8, 9-10, 23. Ravin was also in possession of Bill Krenz’s article on the Mission Menace bow before filing its Petition. EX2009, 8 (“the 2009 Mission Menace bow to Bill Krenz of Bow Report in the last quarter of 2008. He was allowed to test the Mission Menace and ultimately wrote the article produced as MCP_2_823-24. MCP”). Yet, Ravin made no mention of this fact in the Petition. Instead, Ravin pursued a Petition relying on a primary reference (Darlington) that it knew or should have known MCP would be able to antedate.

E. Provisional Application

The ’989 Patent was originally filed as U.S. Patent Application No. 12/895,610 (“’610 Application”) claiming priority to the filing date (Sep. 30, 2009)

of U.S. Provisional Patent Application No. 61/247,473 (“’473 Provisional”).² EX1002, 93 (Filing Receipt); EX2001. The ’473 Provisional incorporates U.S. Patent Application No. 12/248,467 (“’467 Application”) by reference in its entirety in accordance with 37 C.F.R. 1.57. See EX2001, 1:9-11 (“All US patents and applications and all other published documents mentioned anywhere in this application are incorporated herein by reference in their entirety”), 4:2 (citing “US Patent Application 12/248,467.”). At the time the ’473 Provisional was filed the ’467 Application was not yet published. When the ’610 Application was filed the incorporation by reference language was updated to identify the publication number of the ’467 Application, namely, U.S. Pat. Pub. No. 2010/0089375. EX1001, 3:19-21 (“Compound bows are generally known, for example as described in US 2010/0089375, the entire content of which is hereby incorporated herein by reference.”). The table below identifies exemplary written description support in the ’473 Provisional for each independent claim of the ’989 Patent.

<u>’989 Patent (Claim 1)</u>	<u>Exemplary Support (’473 Prov.) (EX2001)</u>
<i>1(Pre):</i> An archery bow having a brace condition and a drawn condition, the archery bow comprising:	pp. 1:4-5 (“This invention relates generally to archery bows and more specifically to a cam configuration suitable for use in bows, such as a

² Ravin concedes the ’473 Provisional’s filing date “as the priority date for the Challenged Claims.” Pet., 2.

	compound bow.”); 3:21-23 (“Figure 3 shows a combination of Figures 1 and 2, wherein the subject matter of Figure 1 (brace condition) is shown in dashed lines and the subject matter of Figure 2 (drawn condition) is shown in solid lines.”).
<i>1(a):</i> a riser;	The ’473 Provisional does not explicitly mention a riser, but the ’467 Application does. EX2004, FIG. 1. In addition, a riser is an inherent feature of a compound bow. <i>In re Reynolds</i>, 443 F.2d 384, 170 USPQ 94 (CCPA 1971); <i>Yeda Research and Dev. Co. v. Abbott GMBH & Co.</i>, 837 F.3d 1341, (Fed. Cir. 2016).
<i>1(b):</i> a first limb and second limb supported by the riser;	p. 2:16-17 (“The first power cable 24 will extend from an opposite limb or rotatable member (not shown) to the cam 10.”); <i>see also</i> EX2004, FIG. 1. In addition, limbs are inherent features of a compound bow. <i>In re Reynolds</i>; <i>Yeda Research</i>.
<i>1(c):</i> a first rotatable member supported by the first limb on a	FIGS. 1-6 (cam 10); pp. 2:1-8 (“Figures 1-3 show an embodiment of a cam 10 that is

first axle, a second rotatable member supported by the second limb on a second axle,	suitable for use in a compound archery bow. A drawstring 20 is attached to the cam 10, which will typically extend to another rotatable member of the bow, such as a pulley or another cam.”); 2:16-23.
1(d): the first rotatable member comprising a drawstring track, a cam track, a capstan and a terminal, wherein said drawstring track is oriented in a first cam plane and said cam track is oriented in a second cam plane offset from said first cam plane,	FIGS. 1-6 (drawstring track – see drawstring path along cam 10, cam track 14, capstan 30, terminal 32); pp. 2:1-8, 2:16-23.
1(e): a drawstring extending between the first rotatable member and the second rotatable member;	FIGS. 1-6 (drawstring 20); p. 2:1-8.
1(f): a power cable attached to said terminal and extending toward the second limb, said power cable comprising an elongate straight portion located near said first rotatable member, a capstan portion in contact with said capstan and a terminal portion in contact with said terminal;	FIGS. 1-6 (power cable 24).

<i>I(g):</i> wherein, in the brace condition, the power cable wraps around the capstan in a first rotational direction as the power cable is traversed from the elongate straight portion to the terminal portion; and	FIGS. 1, 4; pp. 2:24-30 (“the location of the terminal post 32 and the shape of the capstan 30 result in the cable 24 to wrapping around the capstan 30 in a direction away from the axle 18 before terminating on the post 32. In some embodiments, the cable wraps around the capstan 30 in a direction opposite the direction of cam 10 rotation as the bowstring 20 is drawn. ”); 3:28-32.
<i>I(h):</i> when the bow is drawn from the brace condition, the first rotatable member rotates in a second rotational direction that is opposite the first rotational direction ...	FIGS. 1-6; pp. 2:24-30 (“the location of the terminal post 32 and the shape of the capstan 30 result in the cable 24 to wrapping around the capstan 30 in a direction away from the axle 18 before terminating on the post 32. In some embodiments, the cable wraps around the capstan 30 in a direction opposite the direction of cam 10 rotation as the bowstring 20 is drawn. ”); 3:28-32.
<i>I(i):</i> wherein, in the brace condition, the elongate straight portion defines a plane, wherein said first axle and said terminal are located on opposite sides of said plane.	FIGS. 1, 4 (power cable 24).

<u>'989 Patent (Claim 11)</u>	<u>Exemplary Support ('473 Prov.) (EX2001)</u>
11(Pre): An archery bow having a brace condition and a drawn condition, the archery bow comprising:	<i>See 1(Pre).</i>
11(a): a riser;	<i>See 1(a).</i>
11(b): a first limb and second limb supported by the riser;	<i>See 1(b).</i>
11(c): a first rotatable member supported by the first limb on a first axle, a second rotatable member supported by the second limb on a second axle,	<i>See 1(c).</i>
11(d): the first rotatable member comprising a drawstring track, a cam track, a capstan and a terminal, wherein said drawstring track is oriented in a first cam plane and said cam track is oriented in a second cam plane offset from said first cam plane,	<i>See 1(d).</i>
11(e): a drawstring extending between the first rotatable member and the second rotatable member;	<i>See 1(e).</i>

11(f): a power cable attached to said terminal and extending toward the second limb, said power cable comprising an elongate straight portion located near said first rotatable member, a capstan portion in contact with said capstan and a terminal portion in contact with said terminal;	<i>See 1(f).</i>
11(g): wherein, in the brace condition, the power cable wraps around the capstan in a first rotational direction as the power cable is traversed from the elongate straight portion to the terminal portion; and	<i>See 1(g).</i>
11(h): when the bow is drawn from the brace condition, the first rotatable member rotates in a second rotational direction that is opposite the first rotational direction ...	<i>See 1(h).</i>
11(i): wherein, in the drawn condition, the capstan is located closer to the elongate straight portion than the terminal.	FIGS. 2, 5 (power cable 24).

<u>'989 Patent (Claim 12)</u>	<u>Exemplary Support ('473 Prov.) (EX2001)</u>
12(Pre): An archery bow having a brace condition and a drawn condition, the archery bow comprising:	<i>See 1(Pre).</i>
12(a): a riser;	<i>See 1(a).</i>
12(b): a first limb and second limb supported by the riser;	<i>See 1(b).</i>
12(c): a first rotatable member supported by the first limb on a first axle, a second rotatable member supported by the second limb on a second axle, the first axle and the second axle defining an axle plane,	<i>See 1(c); see also FIGS. 1-6 (axles 18); p. 2:16-17 ("The first power cable 24 will extend from an opposite limb or rotatable member (not shown) to the cam 10."); although not show in the figures a POSITA would understand that a plane is formed between two axles of a compound bow. EX2007, para. 47.</i>
12(d): the first rotatable member comprising a drawstring track, a cam track, a capstan and a terminal, wherein said drawstring track is oriented in a first cam plane and said cam track is oriented in a second cam plane offset from said first cam plane;	<i>See 1(d).</i>

12(e): a drawstring extending between the first rotatable member and the second rotatable member, the drawstring extending from the first rotatable member at an exit location;	<i>See</i> 1(e); FIGS. 1, 4 (show exit locations of drawstring 20 on cam 10).
12(f): a power cable attached to said terminal and extending toward the second limb, said power cable comprising an elongate straight portion located near said first rotatable member, a capstan portion in contact with said capstan and a terminal portion in contact with said terminal;	<i>See</i> 1(f).
12(g): wherein, in the brace condition, the axle plane divides the first rotatable member to a first part and a second part, the capstan and the terminal located in the first part, the drawstring exit location located in the second part, and	FIGS 1, 4 (cam 10, axle 18, drawstring 20, terminal 32); a plane extending between the two axles of a compound bow with the cam configuration shown in FIGS. 1, 4 will divide the cam 10 into two sections with the drawstring exit on one side of the plane and the terminal 32 on the other. EX2007, para. 48.
12(h): a distance between the terminal and the axle plane is	FIGS 1, 4 (axle 18, capstan 30, terminal 32); the distance between the capstan 30 and the axle 18 is clearly shorter (and

greater than a distance between the capstan and the axle plane, and	consequently an axle plane) than the distance between the terminal 32 and the axle 18. EX2007, paras. 50-51.
12(i): wherein, in the brace condition, said power cable comprises an elongate straight portion located near said first rotatable member, the elongate straight portion defines a cable portion plane, said first axle and said terminal are located on opposite sides of said cable portion plane.	FIGS. 1, 4 (power cable 24).
<u>'989 Patent (Claim 19)</u>	<u>Exemplary Support ('473 Prov.) (EX2001)</u>
19(Pre): An archery bow having a brace condition and a drawn condition, the archery bow comprising:	<i>See 1(Pre).</i>
19(a): a riser;	<i>See 1(a).</i>
19(b): a first limb and second limb supported by the riser;	<i>See 1(b).</i>
19(c): a first rotatable member supported by the first limb on a first axle, a second rotatable member supported by the second	<i>See 12(c);</i>

limb on a second axle, the first axle and the second axle defining an axle plane,	
19(d): the first rotatable member comprising a drawstring track, a cam track, a capstan and a terminal, wherein said drawstring track is oriented in a first cam plane and said cam track is oriented in a second cam plane offset from said first cam plane;	<i>See 1(d).</i>
19(e): a drawstring extending between the first rotatable member and the second rotatable member, the drawstring extending from the first rotatable member at an exit location;	<i>See 1(e); FIGS. 1, 4 (show exit locations of drawstring 20 on cam 10).</i>
19(f): a power cable attached to said terminal and extending toward the second limb, said power cable comprising an elongate straight portion located near said first rotatable member, a capstan portion in contact with said capstan and a terminal portion in contact with said terminal;	<i>See 1(f).</i>

19(g): wherein, in the brace condition, the axle plane divides the first rotatable member to a first part and a second part, the capstan and the terminal located in the first part, the drawstring exit location located in the second part, and	<i>See 12(g);</i>
19(h): a distance between the terminal and the axle plane is greater than a distance between the capstan and the axle plane, and	<i>See 12(h).</i>
19(i): wherein, in the drawn condition, said power cable comprises an elongate straight portion located near said first rotatable member, the capstan located closer to the elongate straight portion than the terminal.	FIGS. 2, 5 (power cable 24).

IV. RAVIN FAILS TO DEMONSTRATE A REASONABLE LIKELIHOOD THAT THE CLAIMS WOULD HAVE BEEN OBVIOUS

Ravin's sole ground of unpatentability – Ground 1: Darlington in view of Islas – fails to demonstrate that every limitation of the Challenged Independent claims was taught or suggested by either Darlington or Islas. Pet., 4. In particular, the

Petition does not, in fact, show that the “reverse wrap” concept, as claimed, was present in the prior art.

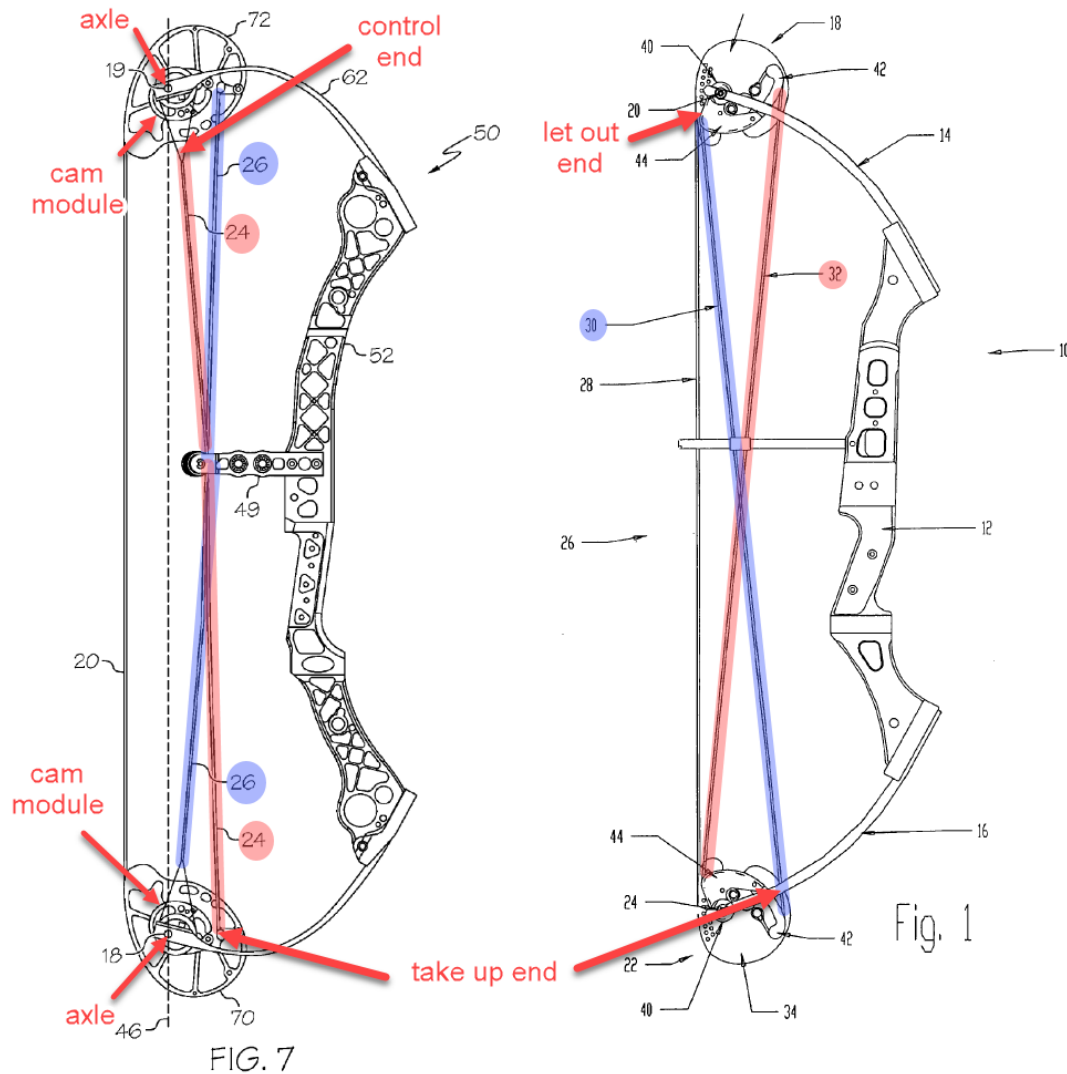
A. Ravin is wrong: Islas does not disclose a “reverse wrap.”

1. The wrap direction on both Darlington and Islas’s power cables are the same.

A dual-cam compound bow typically has two power cables extending between opposing ends of the bow. For instance, FIG. 7 of the ’989 Patent and FIG. 1 of Darlington are both shown below with each power cable highlighted in blue and red. On the bow depicted in FIG. 7 of the ’989 Patent each power cable has one end attached to the cam and an opposite end attached to the bow axle. EX1001, col. 3:32-42, FIG. 7. The ’989 Patent does not name the power cable ends, but for convenience of reference here we refer to them as the “take up end” and “control end,” respectively. In the ’989 Patent, the take up end wraps onto the cam module of the cam as the bow is drawn, and thus is “taken up” onto the cam module. *Id.* The control end remains fixed, attached to the bow axle, as the bow is drawn. *Id.* Darlington’s bow is different. In Darlington’s bow, both ends of each power cable are attached to a cam (pulleys 18/22). EX1004, col. 3:14-37, FIGS. 1-2. Darlington explains how, as the bow is drawn, one end of the power cable (*i.e.*, the take up end) is wrapped or taken up in cable groove sections of one pulley, while the opposite

end (referred to herein as the “let out end”) is unwrapped from, or let out of, the groove sections of the opposite pulley. *Id.* Darlington describes:

As bowstring cable 28 is drawn from the rest position of FIGS. 1 and 2 toward the fully drawn position of FIG. 1A, the bowstring cable is withdrawn from the bowstring let-out grooves 38 on the upper and lower pulleys, upper pulley 18 is rotated counterclockwise in FIGS. 1 and 2, and lower pulley 22 is rotated clockwise, around the respective axles 20, 24. **Power cable 30 is let out** from cable groove sections 50b and then 50a on pulley 18 **while being taken up** in groove section 50c, then groove section 50b and then groove section 50a on pulley 22. At the same time, **power cable 32 is taken up** into cable groove section 50c, then cable groove section 50b and then groove section 50a on pulley 18 **while being let out** of groove section 50b and then section 50a on pulley 22. EX1004, col. 3:14-26 (emphasis added).



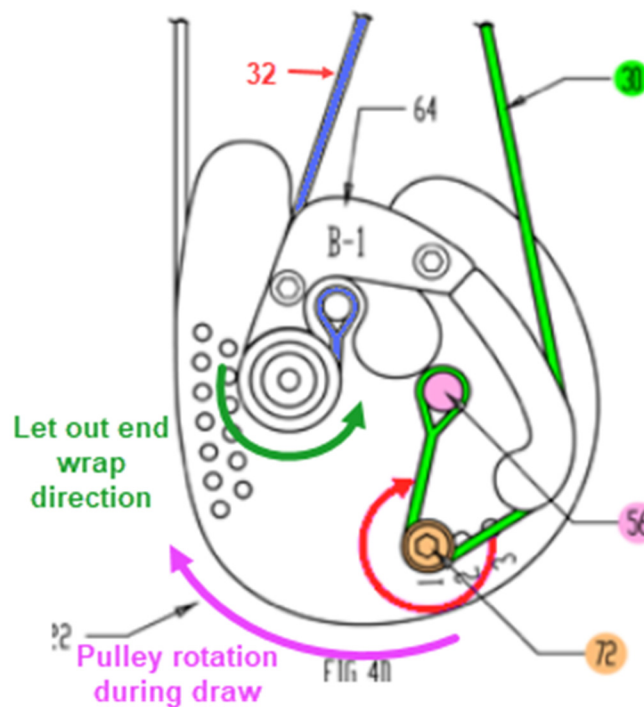
EX1001, FIG. 7; EX. 1004, FIG. 1 (both annotated)

Ravin acknowledges that the take up end of Darlington's power cable 30 wraps around post 72 "in a first rotational direction," but that this first rotational direction is not opposite to the rotational direction of the pulley when the bow is drawn, as required by the '989 Patent's claims. Pet. 29, 31. Ravin then argues that it would have been obvious, from Islas, to wrap Darlington's power cable 30 in a

direction that is opposite to the rotational direction of the pulley when the bow is drawn.

Notably, the let out end of Darlington's power cables (see cable 32 below) wrap in a direction opposite to the pulley's rotation when the bow is drawn.

EX1004, col. 3:14-26, FIG. 4D. This is because both ends of Darlington's cables, the take up end and the let out end, wrap inward towards the center of the pulley.

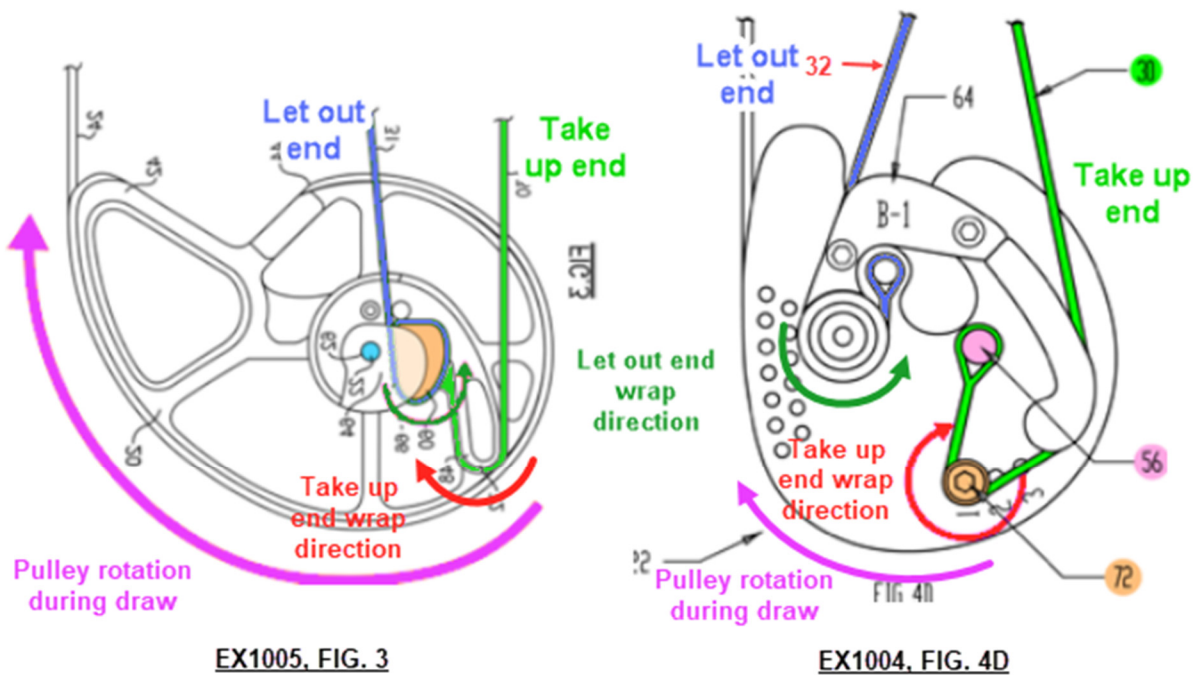


Pet., 29 (Annotated Darlington Fig. 4D, with additional annotations to power cable 32).

Ravin incorrectly asserts that Islas discloses the “reverse wrap” concept. See, Pet, 31-32. Instead, Islas's cams have the same general configuration as Darlington – both ends of the power cables (31/32) wrap inward towards the center

of the cam. Like Darlington, the take up end of Islas's power cable wraps in the same direction that the cam rotates when the bow is drawn, and the let out end wraps in the opposite direction. *Compare* EX1005, FIG. 3 *with* EX1004, FIG 4D (both reproduced below from Pet., 31, 29 with additional annotations, EX1005, FIG 3 is also flipped and rotated to show the same orientation as EX1004, FIG. 4D).³ Thus, because the respective ends of Islas's and Darlington's power cables are wrapped in the same inward direction, Islas does not disclose the "reverse wrap" concept of the '989 Patent.

³ The let out end of Islas's power cable 31 does traverse past the cam's axis of rotation (pivot pin 62), *compare* EX1005, FIG. 1 *with* FIG. 3, by passing behind the pivot pin 62. See EX1005, [0032], FIG. 4 (illustrating a passage behind pivot pin 62 and between the crank portion 64 and the power cam member 32). However, power cable 31 is still let out as the cam rotates when the bow is drawn, *see* EX1005, FIG. 1, like the let out end of Darlington's power cables.

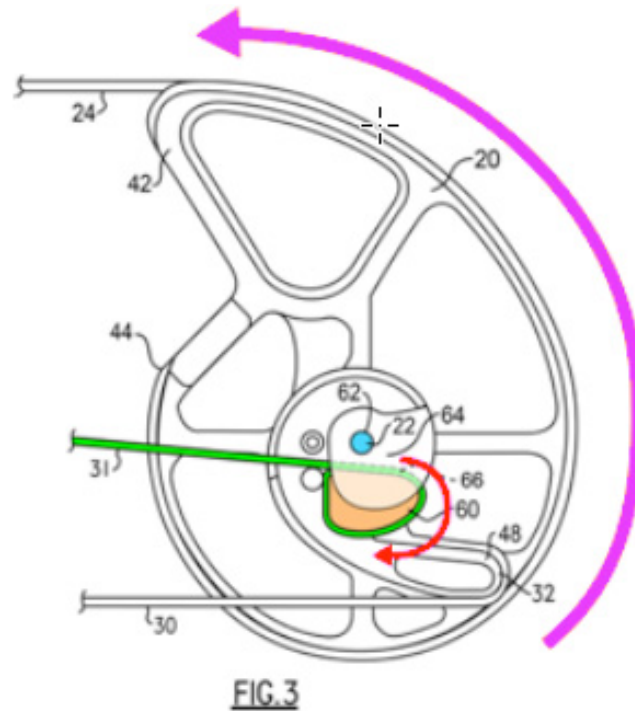


Pet., 31, 29 (Annotated Islas FIG. 3 and Annotated Darlington Fig. 4D, with additional annotations to their power cables)

2. **Ravin fails to acknowledge the distinction between the “let out” and “take up” ends of the power cables, let alone explain why a POSITA would ignore such a distinction.**

Ravin’s argument that Islas power cable 31 wraps in a rotational direction that is opposite to the rotational direction of Islas’s cam 20 is misleading. *See*, Pet., 31-32. Ravin’s argument points to the let out end of Islas’s power cable as though it were the take up end of a power cable wrapped opposite to the cam’s rotational direction during draw. *Id.* (see Ravin’s annotations to Islas’s FIG. 3 reproduced below). This is a significant because, Ravin then argues that it would have been

obvious to wrap Darlington's take up end like Islas's let out end. *Id.* Yet, as discussed and shown above, Darlington's cams show a similar configuration of let out end as Islas.



Pet. 31

A POSITA would have recognized the distinction between the take up and let out ends of a power cable and understood the different purposes and function of each. EX2007, para. 84. Indeed, Darlington provides a thorough explanation of such. EX1004, col. 3:13-37. The cam and cable wrapping direction at the let out end of the power cable function to let out the power cable as the bow is drawn. *Id.* The cam and cable wrapping direction at the take up end of the power cable function to take up the power cable as the bow is drawn. *Id.*

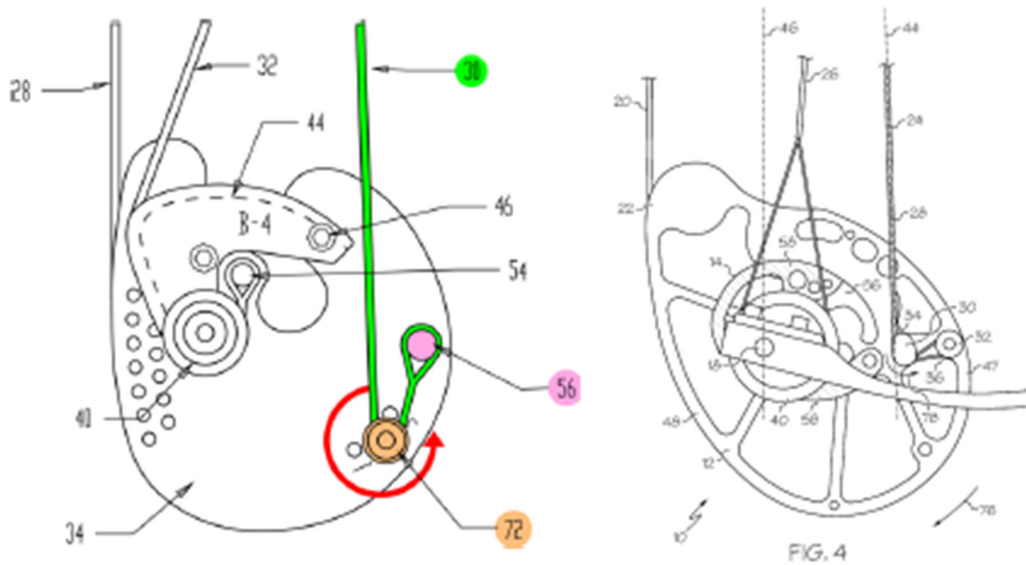
A legally sufficient obviousness analysis must be “thorough and searching,” and must “articulate a satisfactory explanation ... including a rational connection between the facts found and the choice made.” *In re Nuvasive, Inc.*, 842 F.3d 1376, 1381-82 (Fed. Cir. 2016). There are gaping holes in Ravin’s obviousness analysis that fall far short of the legal requirements. Pet., 32-36. Ravin’s entire obviousness combination hinges on its misapplication of Islas. The analysis fails to account for the differences in purpose and function of the power cable take up and let out ends. Ravin is silent on why a POSITA would overlook these differences in choosing to modify Darlington’s take up end with Islas’s let out end cable wrapping direction. Indeed, as Dr. Reinholtz explains, a POSITA would not have modified the wrapping direction of Darlington’s take up end based on Islas’s let out end because of the differences in purpose and function of the take up end and let out end. EX2007, paras. 84, 87. Additionally, Ravin’s analysis fails to address why a POSITA would find inspiration from Islas to modify Darlington’s power cable wrapping direction when Islas’s power cables are wrapped in the same directions.

In view of these deficiencies in Ravin’s analysis, the Board should reject Ravin’s request to find the Challenged Claims obvious over Darlington and Islas. To proceed otherwise – with no argument or evidence from Ravin as to why a POSITA would have ignored both the differences in the take up and let out ends of the power cable or why a POSITA would modify Darlington in view of Islas’s same

wrapping directions – would be “to fall victim to the insidious effect of a hindsight syndrome wherein that which only the inventor taught is used against its teacher.” *W.L. Gore & Associates, Inc. v. Garlock, Inc.*, 721 F.2d 1540, 1553 (Fed. Cir. 1983).

B. The combination of Darlington and Islas fails to disclose multiple limitations of the independent claims.

Ravin relies on a “modified Darlington pulley” to argue that several limitations of the independent claims are obvious. *See, e.g.*, Pet., 30-36, 44-47, 69-73, 84-86, 91-93. But, for the reasons discussed in Section IV.A. Ravin’s modified pulley is based on faulty and unsupported reasoning. Consequently, the resulting modification is nothing more than an improper hindsight reconstruction of the ’989 Patent’s FIG. 4. *Compare* Pet., 30 (Ravin’s annotated image of the “modified Darlington pulley”) *with* EX1001, FIG. 4 (both reproduced below); *W.L. Gore*, 721 F.2d at 1553. Therefore, Ravin fails to show how the prior art satisfies each of the claim limitations (enumerated below) that are mapped to Ravin’s “modified Darlington pulley” because it relies on Ravin’s faulty and unsupported combination of Darlington and Islas.



Pet. 30, EX1001, FIG. 4

1. Independent Claim 1

Ravin relies on its “modified Darlington pulley” to disclose the following limitations of claim 1:

“...when the bow is drawn from the brace condition, the first rotatable member rotates in a second rotational direction that is opposite the first rotational direction and...”

“... wherein, in the brace condition, the elongate straight portion defines a plane, wherein said first axle and said terminal are located on opposite sides of said plane.”

Pet., 30-36, 44-47. Neither Darlington nor Islas disclose these limitations without recourse to Ravin’s hindsight based modifications.

2. Independent Claim 11

Ravin relies on its “modified Darlington pulley” to disclose the following limitations of claim 11:

“...when the bow is drawn from the brace condition, the first rotatable member rotates in a second rotational direction that is opposite the first rotational direction and...”

“... wherein, in the drawn condition, the capstan is located closer to the elongate straight portion than the terminal.”

Pet., 69-73 (citing 30-36). Neither Darlington nor Islas disclose these limitations without recourse to Ravin’s hindsight based modifications.

3. Independent Claim 12

Ravin relies on its “modified Darlington pulley” to disclose the following limitations of claim 12:

“... a distance between the terminal and the axle plane is greater than a distance between the capstan and the axle plane and...”

“... the elongate straight portion [of the power cable when in a brace condition] defines a cable portion plane, said first axle and said terminal are located on opposite sides of said cable portion plane.”

Pet., 85-87 (citing 30-36, 44-47). Neither Darlington nor Islas disclose these limitations without recourse to Ravin’s hindsight based modifications.

4. Independent Claim 19

Ravin relies on its “modified Darlington pulley” to disclose the following limitations of claim 19:

“... a distance between the terminal and the axle plane is greater than a distance between the capstan and the axle plane and...”

Pet., 91 (citing 80-86). Neither Darlington nor Islas disclose this limitation without recourse to Ravin's hindsight based modifications.

V. CONCLUSION

For at least the reasons discussed above, Patent Owner requests that the Board deny the Petition. Petitioner has failed to demonstrate a reasonable likelihood that any of the Challenged Claims are unpatentable.

Respectfully submitted,

Date: June 14, 2024

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CERTIFICATION UNDER 37 CFR § 42.24(d)

Under the provisions of 37 CFR § 42.24(d), the undersigned hereby certifies that the word count for the foregoing Patent Owner's Preliminary Response to Petition totals 10,091, which is less than the 14,000 allowed under 37 CFR § 42.24(b)(i).

Respectfully submitted,

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CERTIFICATE OF SERVICE

Pursuant to 37 CFR § 42.6(e)(4) and 42.205(b), the undersigned certifies that on June 14, 2024, a complete and entire copy of this Patent Owner's Preliminary Response and accompanying exhibit were provided by email, to the Petitioner, by serving the email correspondence address of record as follows:

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