

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

RAVIN CROSSBOWS, LLC
Petitioner

v.

MCP IP, LLC
Patent Owner

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

**PETITION FOR *INTER PARTES* REVIEW
OF U.S. PATENT NO. 8,683,989**

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I. INTRODUCTION

Ravin Crossbows, LLC (“Petitioner”) respectfully requests *inter partes* review (“IPR”) of claims 1-4 and 7-19 (“Challenged Claims”) of U.S. Patent No. 8,683,989 (“’989 Patent”).

II. SUMMARY OF THE ’989 PATENT

A. Description of the ’989 Patent

The ’989 Patent describes a compound archery bow with an adjustable range of draw weights and draw lengths that are set to match a user’s preferences, size, and strength capabilities. ’989 *Patent* (Ex. 1001), 1:12-28, 3:58-59, Fig. 7. “The bow 50 comprises a power cable 24 that attaches to the first rotatable member 70 and extends toward the second limb 62, terminating on the second rotatable member 72, or in some embodiments, on the second axle 19 or second limb 62,” a configuration that is mirrored on the second member in some embodiments. *Id.*, 3:33-37, 4:4-5:7; Figs. 1-7.

Each rotatable member comprises a cam configured to achieve the desired adjustability and includes a cam track 14, a capstan 30, and a terminal post 32. *Id.*, 4:4-45. At least a portion of the cam track 14 includes an adjustable module 16. *Id.* In Fig. 1, the bow is shown in the brace condition in which cam 10 is the bottom rotatable member, the first power cable 24 extends “from an opposite limb or rotatable member to the cam 10,” creating an elongate straight portion 28 near cam 10 before wrapping around capstan 30 and attaching to terminal post 32. *Id.*

Because of “the location of the terminal post 32 and the shape of the capstan 30,” power cable 24 wraps “around the capstan 30 in a direction away from the axle 18 before terminating on the post 32,” which corresponds to “a direction opposite the direction of cam 10 rotation as the bowstring 20 is drawn.” *Id.*, 4:33-45; Figs. 1-6. According to the example 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.” *Id.*

B. Summary of the Prosecution History

The '989 Patent was filed September 30, 2010, claiming priority to Provisional Application No. 61/247,473 filed September 30, 2009. For this proceeding, Petitioner applies September 30, 2009, as the priority date for the Challenged Claims.

The '989 Patent's application received several rejections during prosecution, including rejections over U.S. Patent No. 4,438,753 (“*Simonds*”) and U.S. Patent No. 6,516,790 (“*Darlington '790*”). '989 *File History* (Ex. 1002), 52-60, 95-104, 128-132. The Examiner found the originally filed claims obvious over *Simonds* in view of *Darlington '790*, explaining that “*Simonds* teaches an integral power cable

and bowstring, 5:8-11; therefore, the terminal portion (19), of the power cable (33) does not include a terminal,” and relies on *Darlington* ’790 for teaching this feature. ’989 *File History*, 98, 129. In response, Applicant argued that a person of ordinary skill in the art “would simply use the *Darlington* design, rather than attempting to modify the Simonds single-cable design.” *Id.*, 115.

The claims were amended to specify that the drawstring track and cam track are in offset planes, leading the Examiner to identify allowable subject matter in dependent claims that was incorporated into the allowed claims.

C. Claim Construction Under 37 C.F.R. § 42.104(b)(3)

In this proceeding, claims are interpreted under the same standard applied by Article III courts (i.e., the *Phillips* standard). 37 C.F.R. § 42.100(b); 83 Fed. Reg. 197 (Oct. 11, 2018); *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312 (Fed. Cir. 2005) (*en banc*). Petitioner applies the plain and ordinary meaning of all claim terms as understood by a PHOSITA for all terms not expressly construed below. Petitioner does not waive any argument in any litigation that claim terms in the ’989 Patent are indefinite or additional terms need construction.

D. Level of Skill of a Person Having Ordinary Skill in the Art

As of September 30, 2009, a person having ordinary skill in the art (“PHOSITA”) at the time of the asserted patents would have had (i) a Bachelor of Science degree in mechanical engineering, materials science, or a similar technical

field; (ii) a working knowledge of and/or experience with projectile weapon (e.g., archery bow) operation and performance; and (iii) two to four years of experience with designing and manufacturing of consumer products. Additional industrial experience or technical training may offset less formal education, while advanced degrees or additional formal education may offset lesser levels of industry experience. *Dec.*, 25-28.

III. REQUIREMENTS UNDER 37 C.F.R. § 42.104

A. Grounds for Standing Under 37 C.F.R. § 42.104(a)

Petitioner certifies the '989 Patent is eligible for IPR and Petitioner is not barred or estopped from requesting IPR challenging the claims of the '989 Patent. Petitioner is not the owner of the '989 Patent, has not filed civil action challenging the validity of any claim of the '989 Patent, and this Petition is filed less than one year after Ravin was served with a complaint alleging infringement of the '989 Patent.

B. Identification of Challenge Under 37 C.F.R. § 42.104(b)

Petitioner requests the Challenged Claims be found unpatentable on the following grounds:

Proposed Ground of Unpatentability	Exhibits
<u>Ground 1:</u> Claims 1-4 and 7-19 are obvious under §103(a) over <i>Darlington</i> in view of <i>Islas</i>	Ex. 1004 Ex. 1005

IV. OVERVIEW OF THE PRIOR ART

A. Darlington

Darlington was not cited nor considered during prosecution. *Darlington* was filed June 30, 2009, published June 26, 2012, and qualifies as prior art under 35 U.S.C. §102(e) (pre-AIA). *Darlington* (Ex. 1004).

According to the '989 Patent, the “invention relates generally to archery bows and more specifically to a cam configuration suitable for use in bows, such as a compound bow.” ’989 Patent, 1:12-14. *Darlington* also provides a compound archery bow with “first and second pulleys mounted on the limbs for rotation around respective axes.” *Darlington*, Abstract; *see also* 1:3-9, 2:32-42, Claim 1. Accordingly, *Darlington* is in the same field of endeavor as the '989 Patent. *Dec.*, 36.

Darlington is also reasonably pertinent to at least one problem addressed by the '989 Patent, including the need to provide for greater adjustability to make bows suitable for a wider range of potential users than prior art designs. *Compare* '989 Patent, 1:23-25, *with* *Darlington*, 3:52-59 (describing the interchangeable draw length modules of Figures 2-4, noting “that modules 48 can be replaced by an associated pair of modules 60 or 62 or 64 to adjust the draw length of the bow without having to disassemble the cam or the bow.”), 4:1-6 (discussing adjusting the

effective length of power cable 30 moving intermediate post 72); *Dec.*, 37.

Therefore, *Darlington* is analogous art to the '989 Patent.

B. Islas

Islas was filed November 9, 2007, claiming priority to Provisional Application No. 60/873,238 filed December 7, 2006, issued June 12, 2008. *Islas* qualifies as prior art under 35 U.S.C. §102(b) (pre-AIA). *Islas* (Ex. 1005).

Like the '989 Patent, *Islas* teaches a bowstring cam assembly for a compound bow. *Compare Islas*, [0002], [0006-0008], *with '989 Patent*, 1:12-14, (stating the “invention relates generally to archery bows and more specifically to a cam configuration suitable for use in bows, such as a compound bow”), 3:18-25, (“FIG. 7 shows an embodiment of a compound archery bow 50” having two cams), 3:26-39. Accordingly, *Islas* is in the same field of endeavor as the '989 Patent. *Dec.*, 38.

Islas is also reasonably pertinent to at least one problem addressed by the '989 Patent, including adjusting the “draw weight and draw length” of the bow to match the size and strength capabilities and preferences of the user. *Compare '989 Patent*, 1:16-22, *with Islas*, [0002] (stating *Islas* is “directed to the field of archery, and more specifically to compound bows of the type employing cams and control cables to achieve a programmed draw weight, and the latter being variable with draw length” and “particularly concerned with improvements to such compound bows which make the bows more compact and streamlined, and which permit the archer to select

the bow's draw characteristic, and which increases the bow's shooting performance."), [0006]-[0008]; *Dec.*, 39. Therefore, *Islas* is analogous art to the '989 Patent.

**V. THERE IS A REASONABLE LIKELIHOOD THAT THE
CHALLENGED CLAIMS ARE UNPATENTABLE**

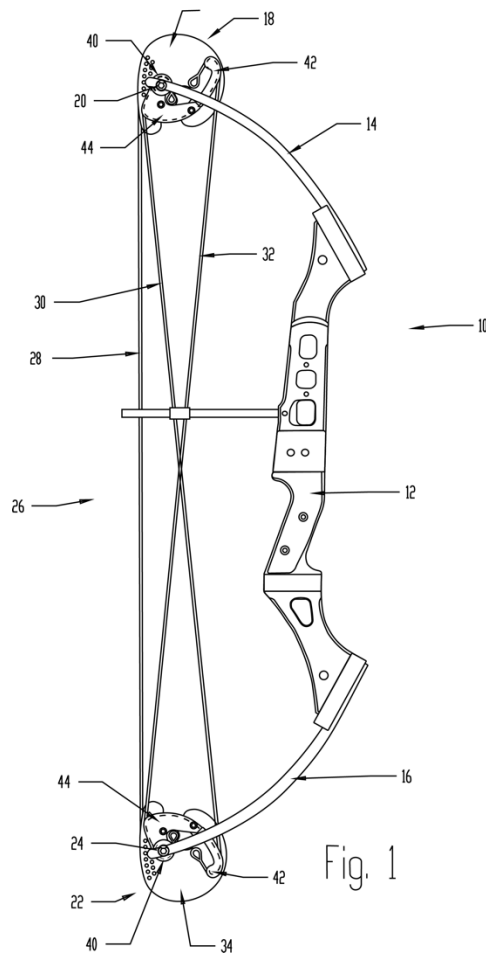
**A. Ground 1: *Darlington* in view of *Islas* Renders Claims 1-4 and 7-19
Obvious**

1. Claim 1

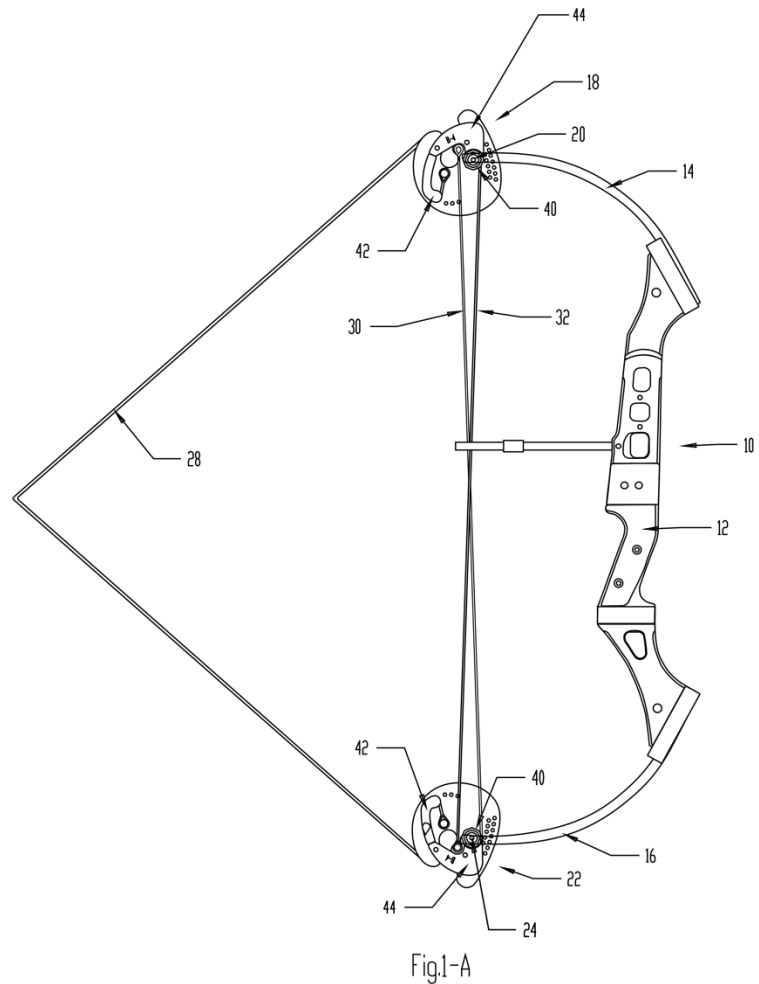
Claim 1 (Pre). “An archery bow having a brace condition and a drawn condition, the archery bow comprising:”

To the extent the preamble is limiting, *Darlington* teaches an archery bow having a brace condition (“rest position,” Fig. 1) and a drawn condition (“fully drawn position,” Fig. 1A).

“Brace Condition”



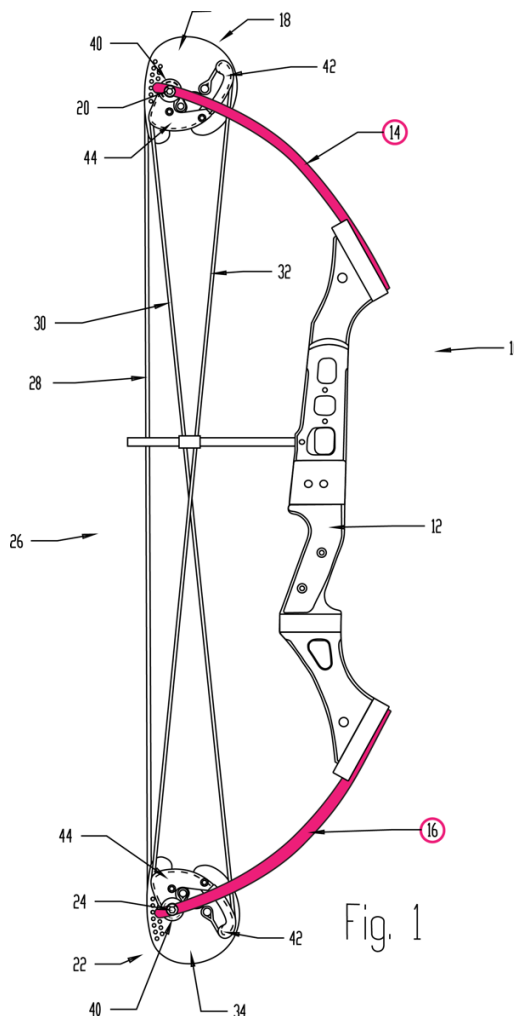
“Drawn Condition”



Darlington, Figs. 1, 1A, 3:14-19, Abstract.

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

Darlington’s bow includes “[a] pair of flexible resilient limbs 14, 16 of fiber-reinforced resin or other suitable resilient construction,” annotated bright pink in Fig. 1 below:

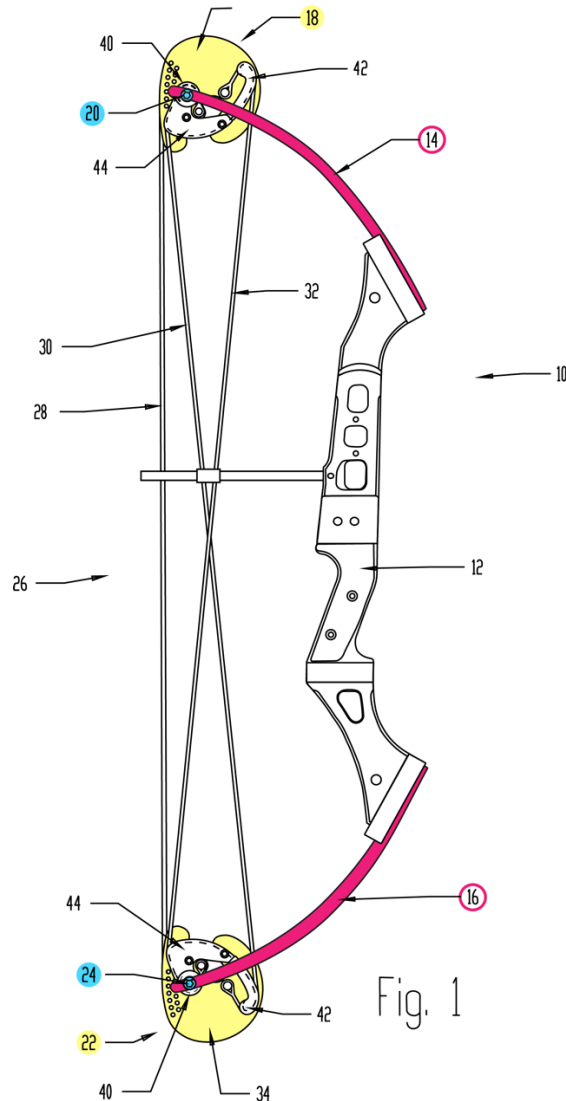


Darlington, Fig. 1 (annotated), 2:32-39, 1:42-55, Abstract. *Darlington*'s limbs are supported by “handle **risers**” that “project away from handle 12.” *Id.* Thus, *Darlington* provides a first limb and second limb supported by a riser, as claimed.

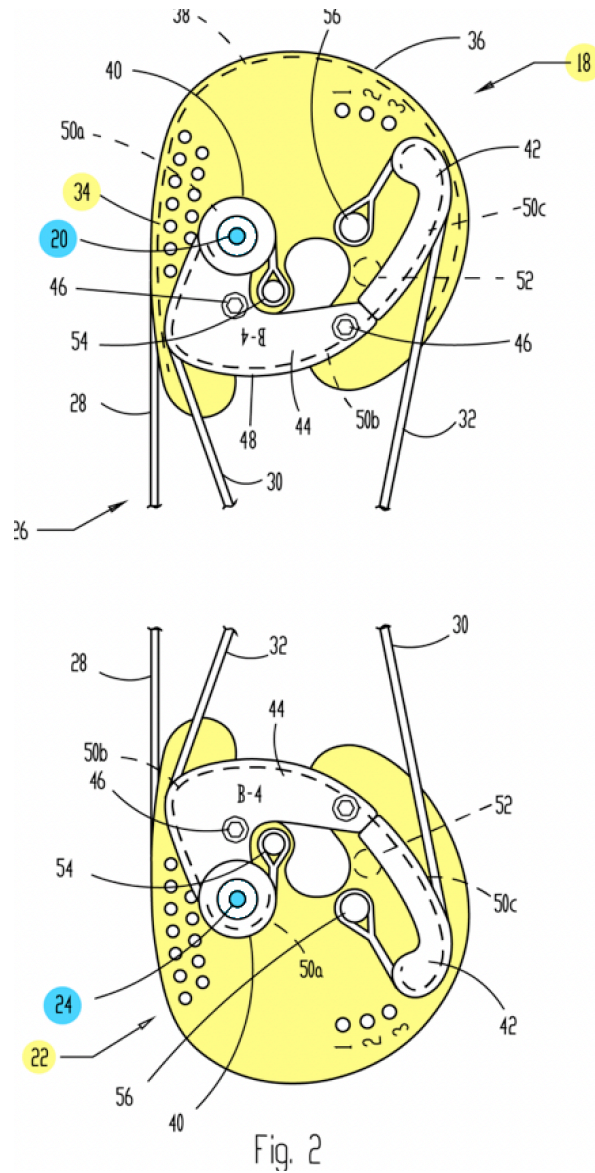
Claim 1(b)(i): “a first rotatable member supported by the first limb on a first axle, a second rotatable member supported by the second limb on a second axle,”

Darlington's bow discloses a lower pulley 22 (a “first rotatable member”) mounted on limb 16 (a “first limb”) for rotation around an axle 24 (a “first axle”) and an upper pulley 18 (a “second rotatable member”) mounted on limb 14 (a

“second limb”) for rotation around an axle 20 (a “second axle”). *Darlington’s* first and second rotatable members are annotated yellow below, illustrating that each is supported by its respective limb 16/14 (annotated pink) on a respective axle 20/24 (annotated light blue):



Darlington, Fig. 1 (annotated), 2:39-42, 1:42-47, Abstract. An up-close view of *Darlington’s* first and second rotatable members with respective axle locations is shown below in Fig. 2:



Darlington, Fig. 2, 2:39-43; *see also* Figs. 4A-C, 5A-C, 3:65-4:6.

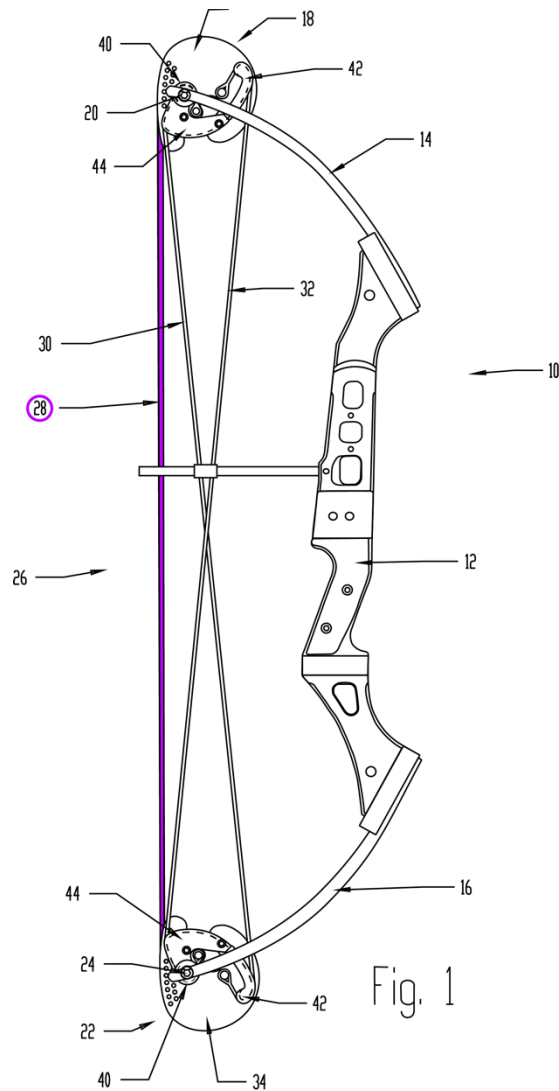
Darlington explains that its upper and lower pulleys are “similar in function” and may be “near mirror images of each other.” *Darlington*, 2:42-47. Specifically, *Darlington* states “lower pulley 22 is essentially a mirror image of [upper] pulley 18” and notes that “It will be [] appreciated that the terms ‘upper’ and ‘lower’ are employed for descriptive purposes only with respect to the orientation of FIGS.

1-2.” *Darlington*, 3:8-13. Thus, *Darlington*’s discussions and illustrations regarding any particular pulley embodiment are appropriately understood as applying to either or both of its “first rotatable member” and “second rotatable member.” *Darlington*, 2:42-47, 3:8-13; *Dec.*, 42. *Darlington* goes on to explain that, in particular embodiments, its “pulleys also can be made non-identical in areas that are non-functional to create a desired difference in appearance” or may otherwise be non-identical for functional purposes (e.g. “to compensate for the arrow rest not being at the true center of the bow”). *Id.* Thus, while any of *Darlington*’s descriptions of pulley designs may be appropriately understood as applying to either of the first and/or second rotatable members, *Darlington*’s pulleys may not necessarily be identical in all embodiments.

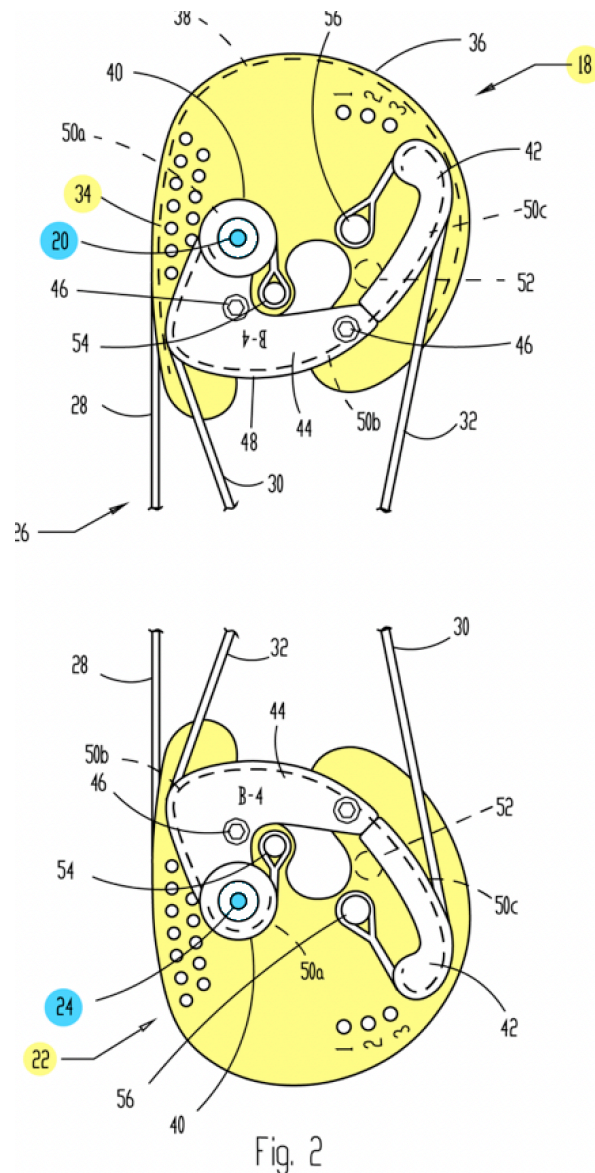
As will be described below for each of limitations 1(b)(ii)-1(b)(vi), each of *Darlington*’s upper and lower pulleys teach rotatable members comprising the particular elements claimed, but for purposes of discussion the lower pulley is treated as the “first rotatable member[.]”

Claim 1(b)(ii): “the first rotatable member comprising a drawstring track,”

Darlington’s bow includes a drawstring (“bowstring cable 28”) “extending between pulleys 18, 22” annotated purple in Fig. 1 below:



Darlington, Fig. 1 (annotated), 2:47-49, 1:52-61. As further illustrated below in annotated Fig. 2, each of *Darlington*'s first and second rotatable members (lower and upper pulleys) include a bowstring let-out groove 38 (annotated grey) along their outer peripheral edges, teaching the recited “drawstring track.”



Darlington, Fig. 2, 2:50-52, 1:59-61, Abstract. *Darlington* explains that the “bowstring cable 28 extends around bowstring let-out groove 38 to a bowstring cable anchor 52 adjacent to the end of the bowstring let-out groove.” *Darlington*, Fig. 2, 2:66-3:2. While a dashed line representing bowstring let-out groove 38 is not replicated on lower pulley 22, Fig. 2 does illustrate bowstring 28 passing behind lower pulley 22 and includes the bowstring cable anchor 52, thus teaching or at least

rendering obvious that the lower pulley 22 also includes the claimed “drawstring track.” *Dec.*, 43. Further, as explained above in Section 1(b)(i), *Darlington’s* upper and lower pulleys may be “near mirror images of each other.” *Darlington*, 2:42-47. Thus, a PHOSITA would have recognized that each embodiment of *Darlington’s* upper and lower pulleys teach and render obvious a drawstring track. *Dec.*, 42-43, *citing Darlington*, 2:42-47.

Claim 1(b)(iii): “[the first rotatable member comprising] a cam track,”

The ’989 Patent describes its cam track as providing a contour that contacts the power cables as the bow is drawn, impacting and/or controlling characteristics of the bow. ’989 *Patent*, 3:58-4:3; *Dec.*, 44. Specifically, the ’989’s cam 10 includes a body portion 12 and an adjustable module 16 (annotated in blue), wherein the “adjustable module 16 comprises at least a portion of the cam track 14[.]”

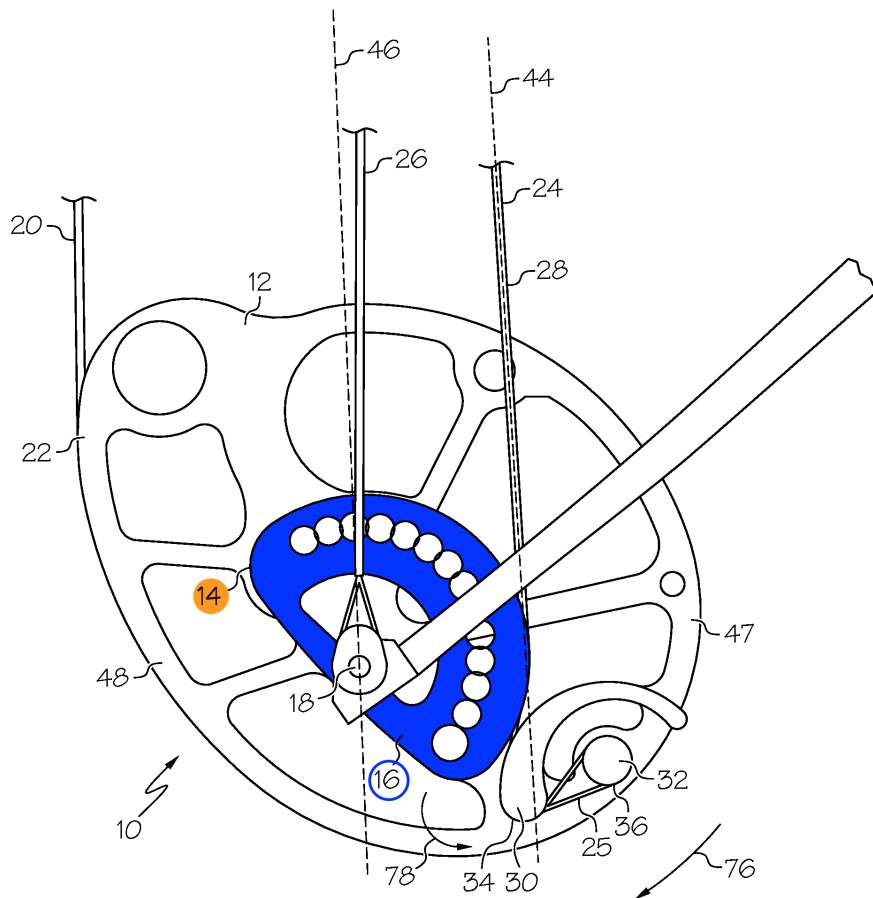


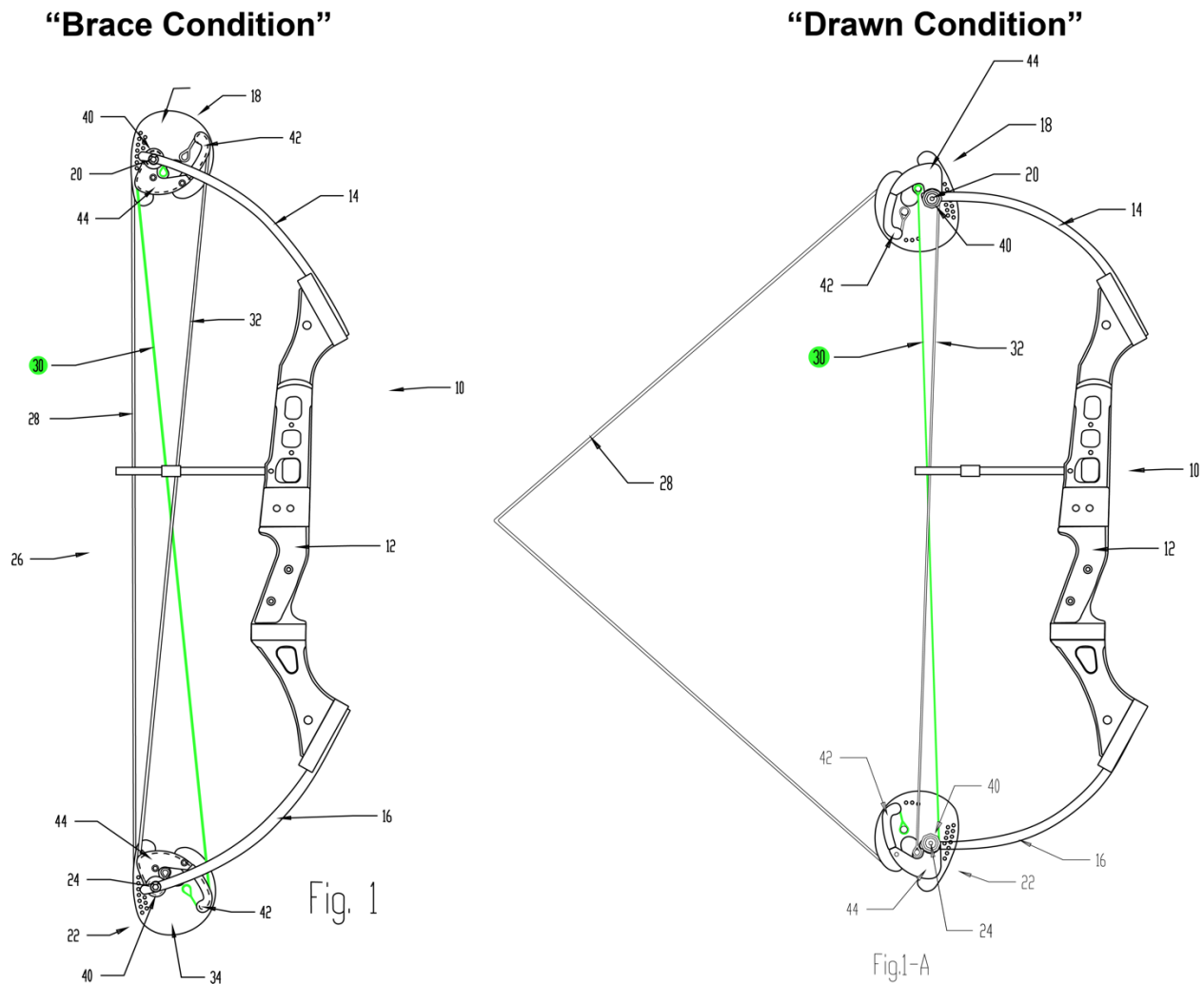
FIG. 1

'989 Patent, Fig. 1 (annotated), 4:4-8. *Darlington* teaches such a cam track.

Darlington's bow includes a pair of power cables extending between its rotatable members (pulleys). *Darlington*, 2:47-49, 1:55-58, Abstract, Figs. 1-5C. *Darlington's* "first cable extends from the first anchor on the first pulley through a portion of the cable groove on the first pulley and then toward the second pulley" and the "second cable extends from the second anchor toward the second pulley." *Darlington*, 1:55-65. Drawing the bow from the brace condition by pulling the bowstring cable away from the bow handle causes the pulleys to rotate, which "lets

out the first cable from the cable groove on the first pulley and takes up the second cable into the cable groove on the first pulley including a portion of such groove previously occupied by the first cable.” *Darlington*, 1:59-65.

The positions of power cable 30 (light green) when *Darlington*’s bow is in the brace and drawn conditions are shown in the below annotated Figs. 1 and 1A:



Darlington, Figs. 1 (left, annotated) and 1A (right, annotated). As shown in the drawn condition of Fig. 1A, power cable 30 wraps around a draw length modification portion comprising draw length module 44 (the mapped “cam track”)

on each of the upper and lower pulleys (“first” and “second rotatable members”).

Darlington, Fig. 2, 1:47-50, 2:50-3:13; *Dec.*, 45.

Darlington’s hub 40, draw length module 44, and section 42 each include a groove 50a-c, respectively. Fig. 2 illustrates details of the mapped cam track formed by second groove portion section 50b extending along the edge 48 of module 44.

Darlington, Fig. 2, 2:57-65. Cable groove 50b is provided on each module 44 of the upper and lower pulleys (18, 22), serving to let out and take up the power cables as the bow is drawn from the brace orientation to the fully drawn orientation.

Darlington, 1:55-2:2, 2:57-3:13, Abstract, Figs. 1-5C. Annotated Fig. 2 below shows the cam track (annotated orange) in module 44 (annotated blue) is shown below in

Fig. 2 of *Darlington*:

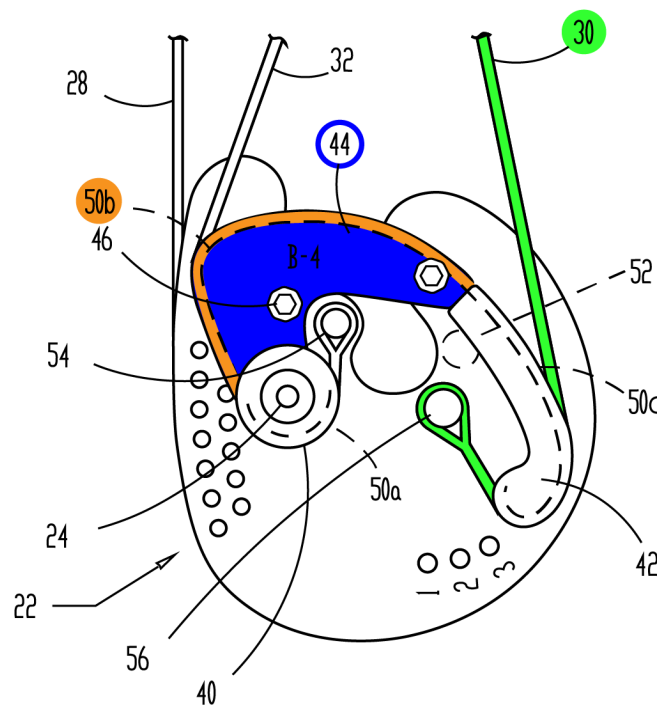


Fig. 2

Darlington, Fig. 2 (excerpt, annotated). The cable groove 50b (both alone and in combination with portions 50a and 50c) provides a contour along the outer edge of draw length module 44 (highlighted in blue) that contacts the power cable 30 (highlighted light green) in the drawn orientation.

As *Darlington*'s bow is drawn, its first rotatable member 22 rotates clockwise (as viewed from the perspective of Fig. 2), such that power cable 30 is taken up along the cam track provided by cable groove 50b, impacting and/or controlling characteristics of the bow. *Darlington*, 1:55-65, 3:14-34, Figs. 1-2; *Dec.*, 45-46. The path of power cable 30 in the drawn condition relative to cable groove 50b of draw length module 44 is shown below in annotated Fig. 1A:

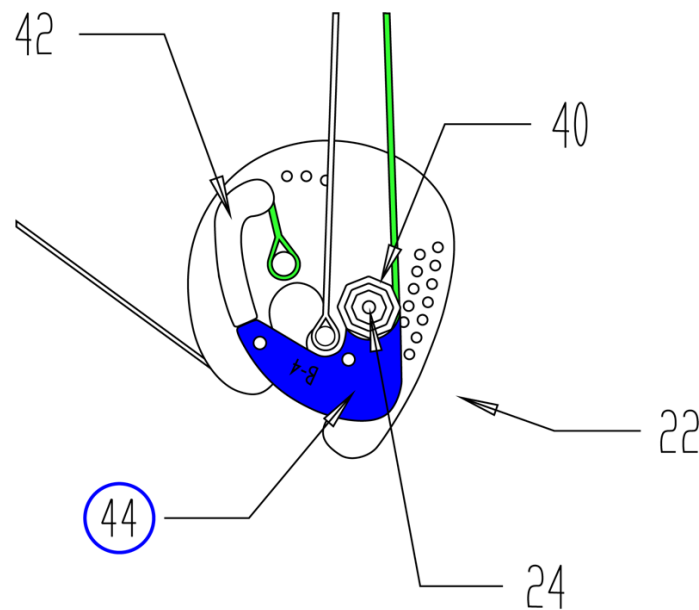


Fig.1-A

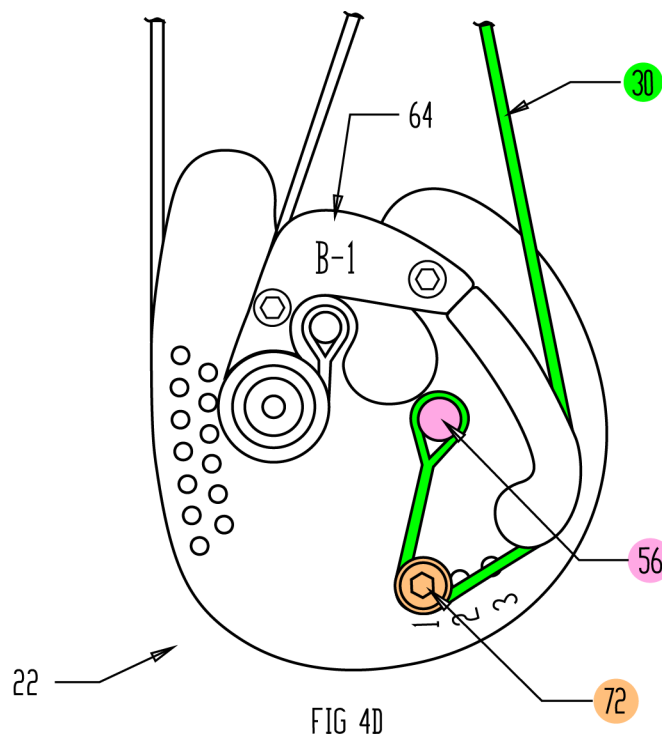
Darlington, Fig. 1A (excerpt, annotated). Thus, *Darlington*'s cable groove 50b, both alone and as modified below pursuant to *Islas*, teaches the recited "cam track."

As will be further discussed below regarding limitation 1(f), *Darlington*'s draw length modification portion is replaceable with alternatively-shaped components "determined by the draw cycle desired." *Infra*, limitation 1(f) *citing Darlington*, 1:23-26, 1:65-2:2, 3:60-64, 4:7-20.

Claim 1(b)(iv): "[the first rotatable member comprising] a capstan and a terminal,"

The '989 Patent describes a capstan that provides a fixed point around which a power cable wraps as it extends from a terminal on a first rotatable member to the opposite rotatable member. '989 *Patent*, 5:26-39, 1:53-59, 4:18-32, Figs. 1-2; *Dec.*, 47. The '989 Patent explains that a capstan provides several known benefits and may be formed from a portion of the rotational member's body. *Id.*, 4:31-32 ("In some embodiments, the capstan 30 comprises a portion of the cam body 12."), 5:26-39 (benefits).

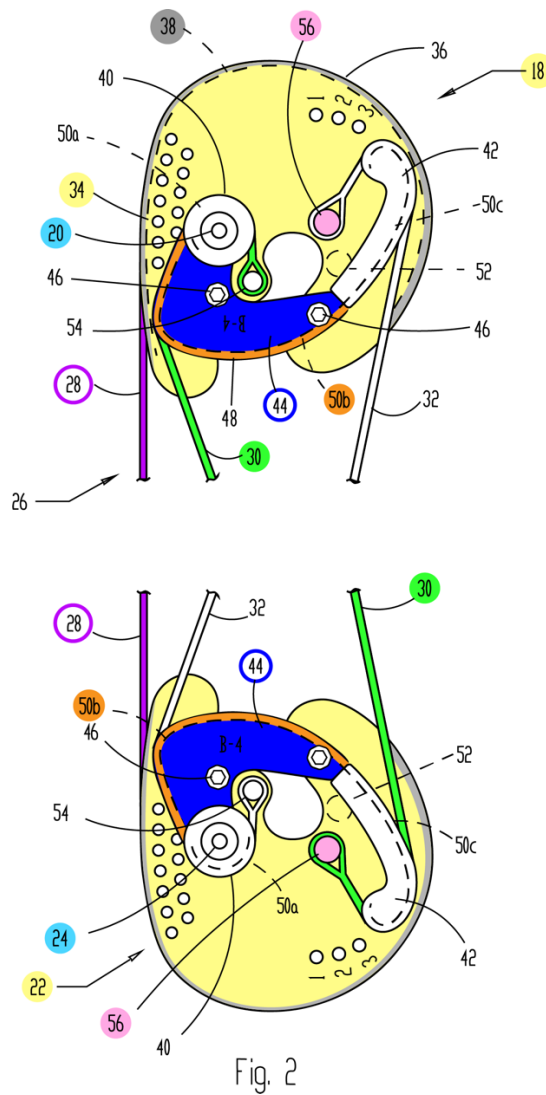
As seen below in annotated Fig. 4D, *Darlington*'s first rotatable member (pulley 22) includes a capstan (intermediate post 72, highlighted orange) around which power cable 30 (highlighted green) wraps as it extends from a terminal (anchor 56, pink) to the opposite pulley.



Darlington, Fig. 4D (annotated), 3:65-4:6, 1:42-50, *see also* Figs. 1, 2, 4A-5C (illustrating alternative configurations); *Dec.*, 48. Like the '989 Patent's description, *Darlington*'s intermediate post 72 provides a fixed point around which its power cable 30 wraps to its termination on anchor 56. *Id.* Thus, *Darlington*'s intermediate post 72 (a "capstan") and anchor 56 (a "terminal") teach limitation 1(b)(iv). *Darlington*'s intermediate post 72 is adjustable between a plurality of locations (labeled 1,2,3 in Fig. 4D above, as well as Figs. 2-5C) to enable a user to adjust the effective length of the power cable, impacting the stresses in the bow as it is drawn and fired. *Darlington*, 4:1-6, 4:11-18; *Dec.*, 69.

Claim 1(b)(v): "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;"

As discussed above regarding limitations 1(b)(i)-1(b)(iii), *Darlington* discloses a rotatable member having a drawstring track (bowstring let-out groove 38) and a cam track (cable grooves 50b). Bowstring let-out groove 38 is oriented in a first plane along the edge of *Darlington's* pulley, while cable groove 50b (along the edge of removable draw length module 44) is oriented in a second plane offset from the first plane:



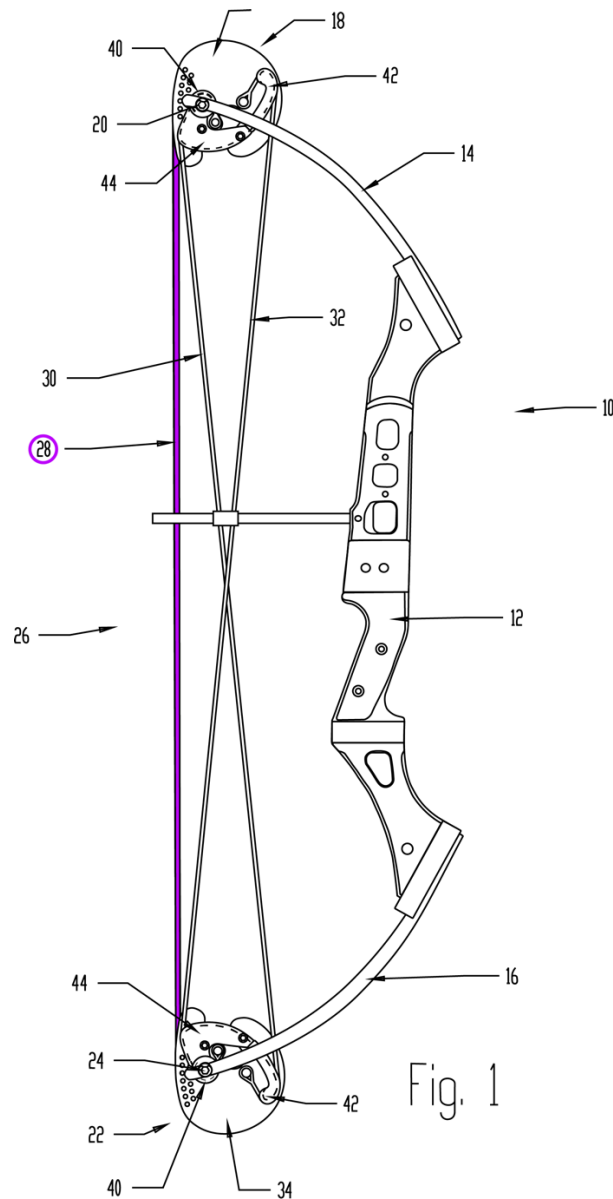
Darlington, Fig. 2 (excerpt, annotated)¹, 2:50-52, 1:59-61 (describing bowstring let-out groove 38), 1:65-2:2, 2:57-3:13 (describing cable grooves 50b), *see also* Abstract, Figs. 1-5C; *Dec.*, 49.

A PHOSITA would have recognized that *Darlington*'s drawstring track (grey) and cam track (orange) are oriented in different planes because draw length module 44 (providing the mapped "cam track" along its edge) is "mounted on" the "flat base 34" portion of *Darlington*'s pulleys "having an outer peripheral edge 36 in which a bowstring let-out groove 38 is disposed." *Darlington*, 2:50-61, Fig. 2; *Dec.*, 49. Thus, *Darlington*'s drawstring track is oriented in a first cam plane that is further from the viewer as seen from the perspective of Fig. 2 than the second cam plane of its cam track (e.g. cable groove 50c along the outer edge of draw length module 44). *Id.*

Claim 1(c): "a drawstring extending between the first rotatable member and the second rotatable member;"

¹ Though the Reference Numbers for bowstring let-out groove 38 and Base 34 are only expressly provided on upper pulley 18 in Fig. 2, a PHOSITA would have recognized that the same structures are also present in lower pulley 22. *Dec.*, 42, 49. *See* Limitations 1(b)(i) (explaining that the upper and lower pulleys are "near-mirror images" of one another) and 1(b)(ii) (describing *Darlington*'s drawstring track).

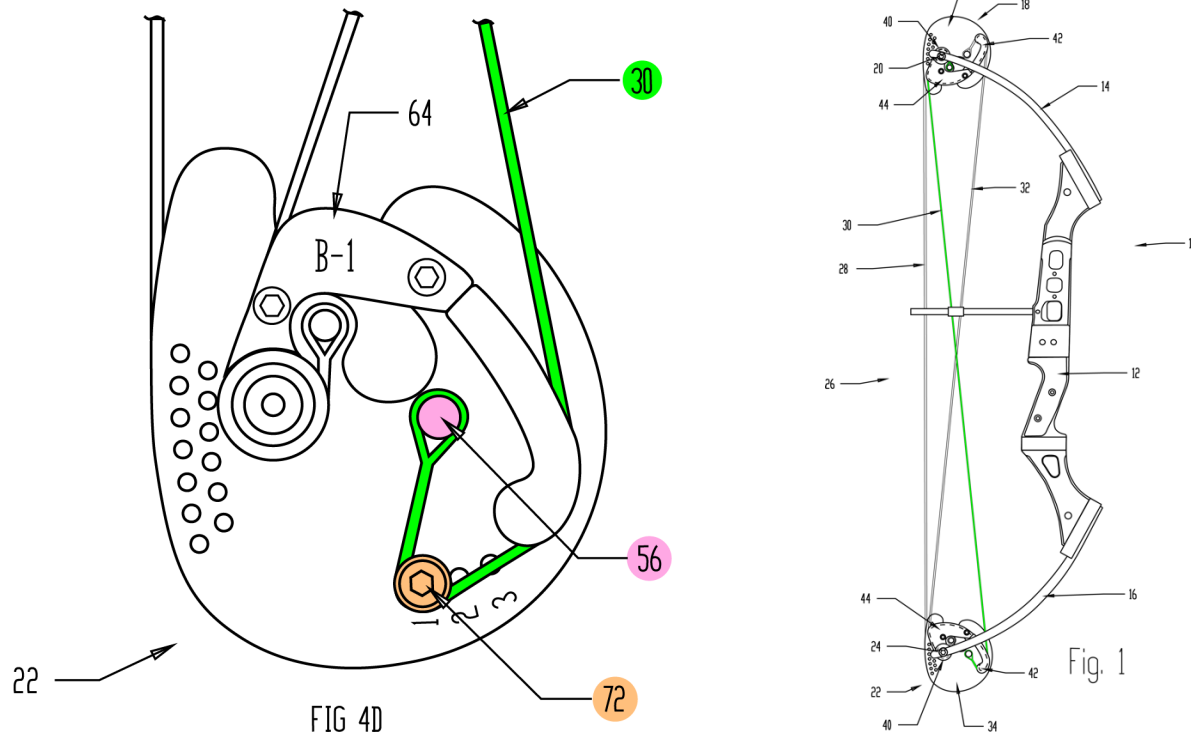
As discussed above, *Darlington's* bow includes a drawstring (“bowstring cable 28”) annotated purple in Fig. 1 below anchored to and “extending between” first and second pulleys (rotatable members) 18, 22, contacting each of them:



Darlington, Fig. 1 (annotated), 2:47-49. See also *Supra* limitation 1(b)(ii).

Claim 1(d)(i): “a power cable attached to said terminal and extending toward the second limb,”

As discussed above, *Darlington's* bow includes a power cable 30 (annotated green below) attached at one end to the mapped terminal (anchor 56, annotated pink) and extending toward the second rotatable member supported by the second limb via the second axle:



Darlington, Figs. 4D (left, annotated), 1A (right, annotated). A PHOSITA would have recognized that *Darlington's* mapped power cable extends from the first rotatable member “toward” the second limb, though the power cable’s distal end is specifically anchored on the second rotatable member (pulley) attached to and supported by the second limb. *Dec.*, 51. *See also Supra* limitation 1(b)(iii).

Claim 1(d)(ii): “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 '989 Patent illustrates an “elongate straight portion” 28 in Fig. 1 below, comprising a portion of the power cable near cam 10 (a first rotatable member) that straightens out to form a long, straight line extending toward the second rotatable member.

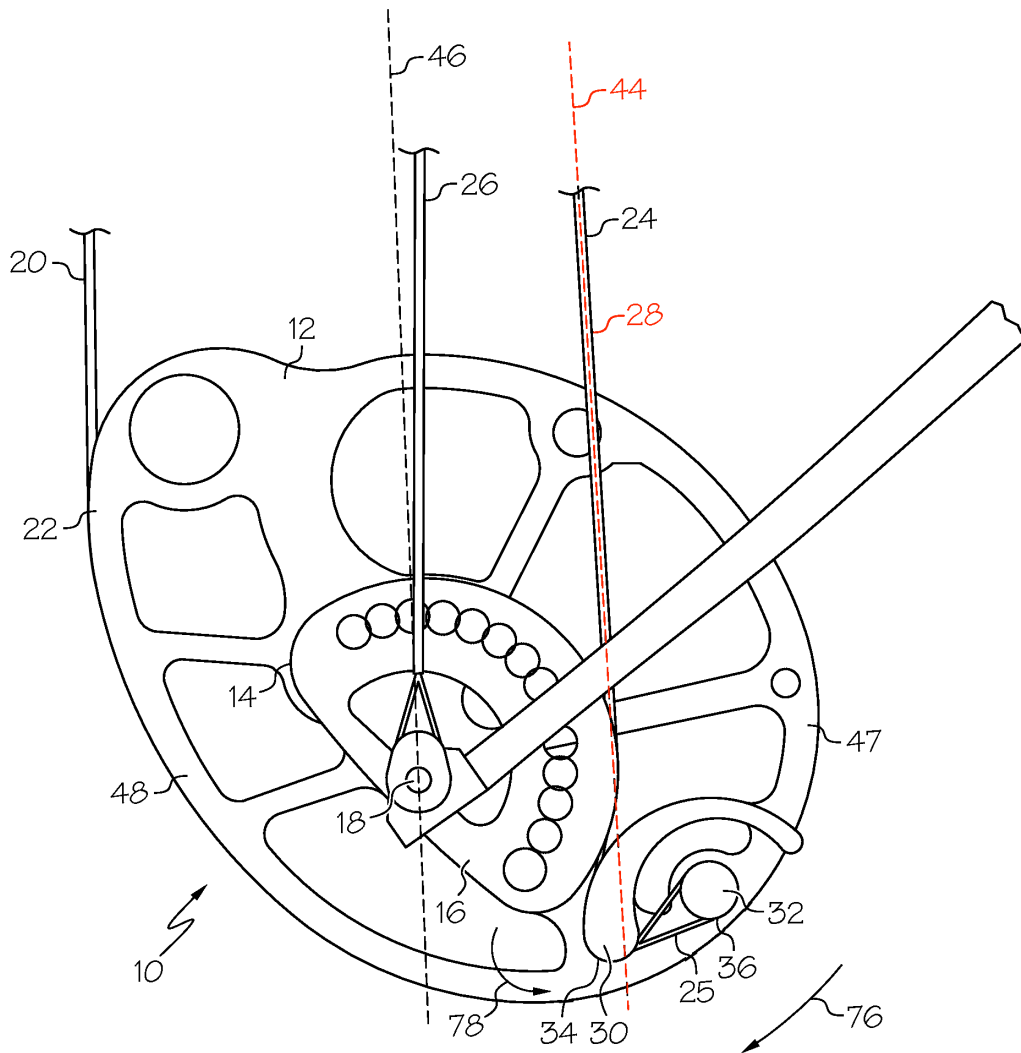
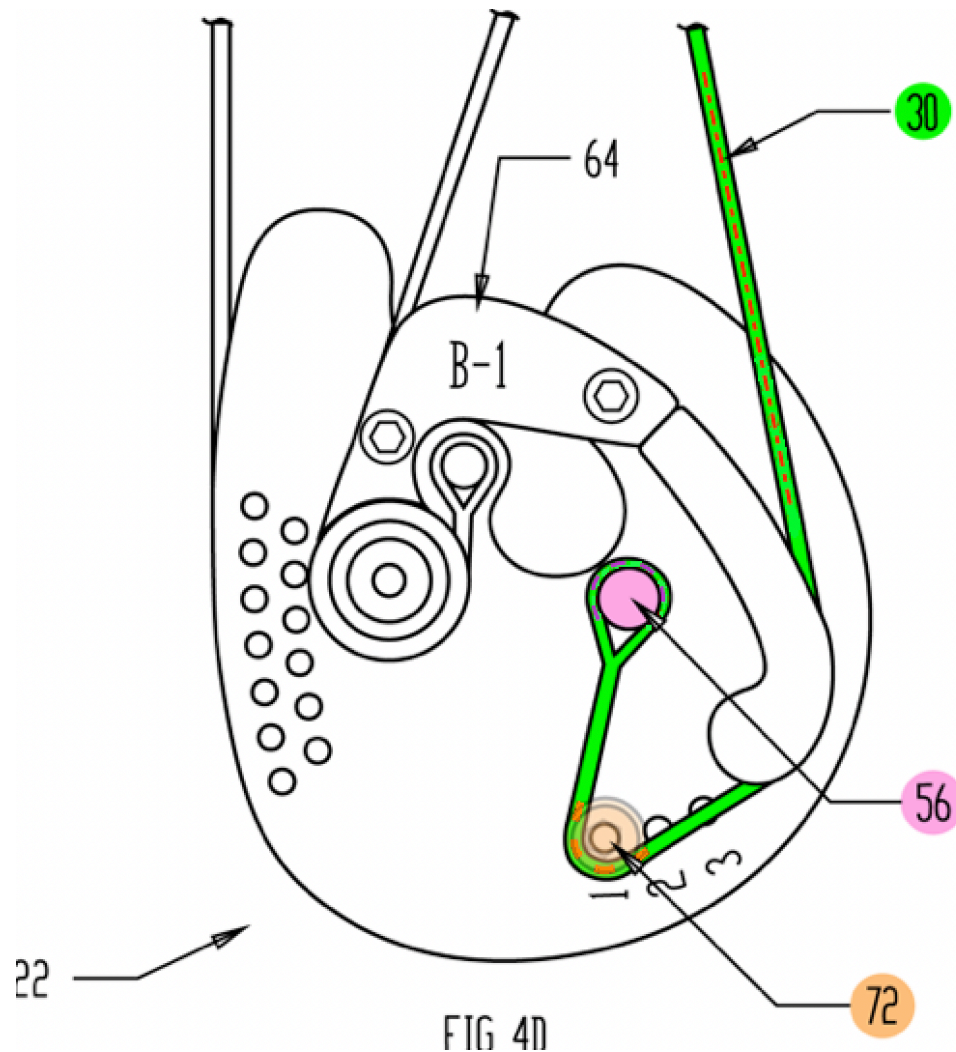


FIG. 1

'989 Patent, Fig. 1, 4:23-25, see also 5:40-45, 5:59-62, Figs. 2, 4; Dec., 52. The “elongate straight portion 28 defines a cable plane 44[.]” '989 Patent, 4:46-48.

Darlington's power cable includes each of the cable portions recited in limitation 1(d)(ii), each of which is shown in annotated Fig. 4D below:



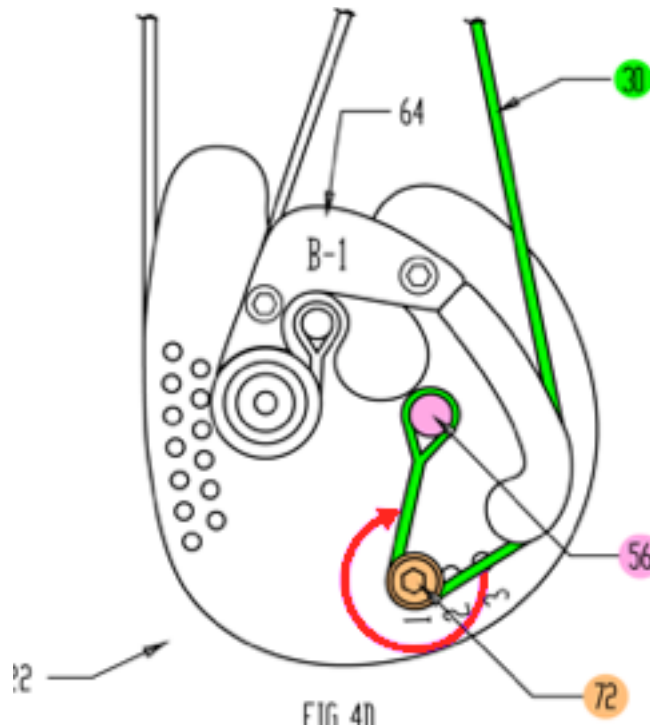
Darlington, Fig. 4D (annotated), 3:65-4:6, *see also* 1:55-2:2, 3:20-37, Figs. 4A-C, 5A-C; *Dec.*, 52.

The portion of *Darlington's* power cable 30 near lower pulley 22 at least includes an “elongate straight portion located near said first rotatable member,” annotated with a dashed red line at the right of annotated Fig. 4D above. *Darlington*, 3:6-8, 1:55-2:2, 3:20-37, Figs. 4A-4D, 5A-C; *Dec.*, 52. The portion of *Darlington's*

power cable 30 that wraps around and contacts the capstan (intermediate post 72, orange) teaches the recited “capstan portion,” annotated with a dashed orange line. *Id.* Similarly, the portion of the power cable that encircles and attaches the power cable to the terminal 56 teaches the claimed “anchor portion,” annotated with a dashed purple line. *Id.* The dashed lines above are not intended to represent the exact boundaries of each of the claimed “portions,” but rather each at least includes a portion of the power cable satisfying the respective claimed portion.

Claim 1(e): “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”

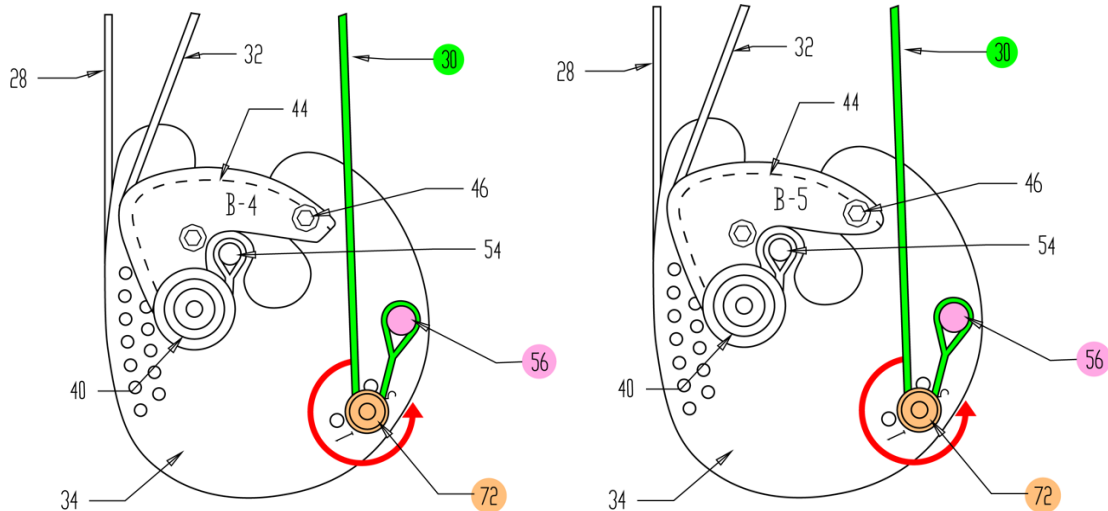
As seen below in Fig. 4D, in the brace condition, the power cable (green) of *Darlington’s* bow wraps in a first rotational direction (indicated by the red arrow) as the power cable is traversed from the elongate straight portion to the terminal portion (pink).



Darlington, Figs. 4D (annotated), *Dec.*, 53 (explaining Fig. 4D is in the brace condition). Thus, *Darlington* alone teaches limitation 1(e) via its power cable 30 that wraps around a capstan 72 in a first rotational direction as the power cable is traversed from the elongate straight portion to the terminal portion (the portion contacting anchor 56) when the bow is in a brace condition.

As will be discussed below regarding limitation 1(f), a PHOSITA would have been motivated by *Islas* to modify the cams of *Darlington*'s bow in a manner reversing the direction the power cable wraps around the capstan. *Infra*, Limitation 1(f). As will be discussed, a PHOSITA would have modified bow by relocating its terminal 56 and applying any other necessary reconfigurations such that the power cable of the modified *Darlington+Islas* bow wraps in the opposite direction around

the capstan 72, away from the center of the pulley and towards the pulley's periphery, as seen in examples of modified *Darlington* pulleys shown below.



As additionally discussed below regarding limitation 1(f), the above figures are not from *Darlington* but represent one potential arrangement of a *Darlington+Islas* bow. These figures represent examples of a PHOSITA's modifications to *Darlington* pursuant to the desirable configuration taught by *Islas*.

Thus, the modified *Darlington+Islas* bow also teaches limitation 1(e). A full description of the modification and motivations thereof is included below for limitation 1(f) and incorporated herein by reference.

Claim 1(f): “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”

As discussed above regarding limitations 1(b)-1(e), *Darlington's* bow includes a first rotatable member that rotates in a first rotational direction and a power cable that wraps around a capstan in a second rotational direction. *Supra.*

However, the second rotational direction of the *Darlington* bow alone is not opposite its first rotational direction, as required by limitation 1(f).

Islas Teaches Limitation 1(f)

Islas teaches a bow with the configuration of limitation 1(f). As seen below in annotated Fig. 3, *Islas*'s bow includes a power cable (31, light green below) which wraps in a first rotational direction (red arrow) around a cam element (60, orange) to a terminate at an “anchor point.”

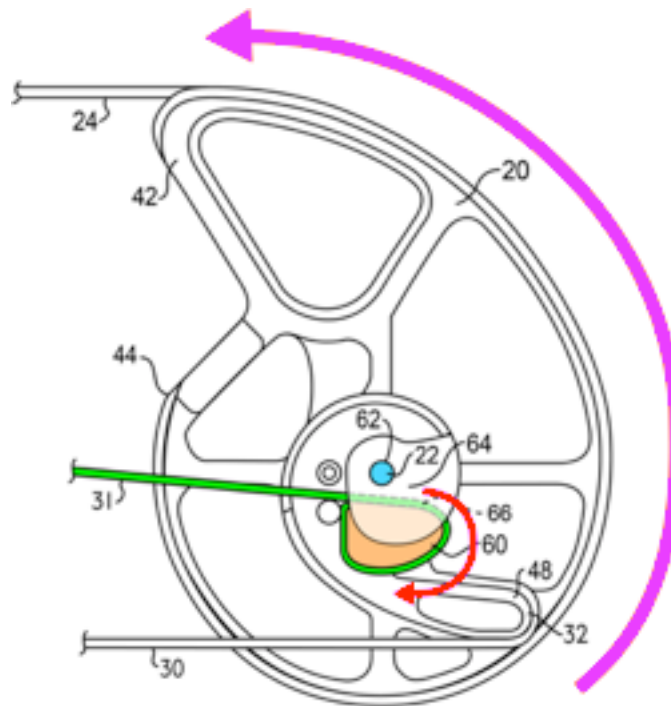


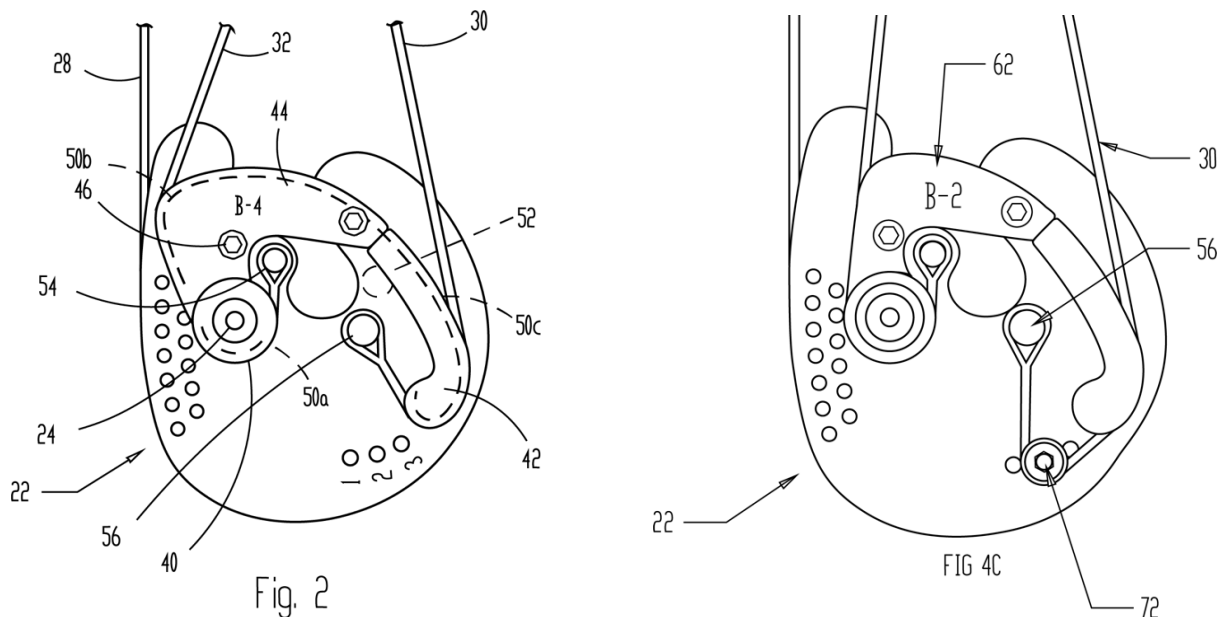
FIG. 3

Islas, Fig. 3 (annotated), [0024]; *Dec.*, 55-57 (further describing element 60 in regard to Fig. 4 and [0030]). The magenta arrow above in Fig. 3 indicates the second rotational direction, in which cam 20 (a “first rotational member”) rotates as the bow is drawn. *Islas*, [0018], [0020], [0032-0034]; *Dec.*, 56. As discussed by Mr. Lange,

the second rotational direction (magenta) for *Islas*'s first rotatable member (cam 20) rotates as the bow is drawn is opposite first rotational direction (red) that *Islas*'s first power cable 31 wraps around element 60 (orange). *Id.* Thus, *Islas* teaches limitation 1(f).

Darlington Modified in View of *Islas* Teaches Limitation 1(f)

Two original *Darlington* figures are reproduced below for discussion, each including the rotatable member, axis, power cable, and terminal recited by claim 1:



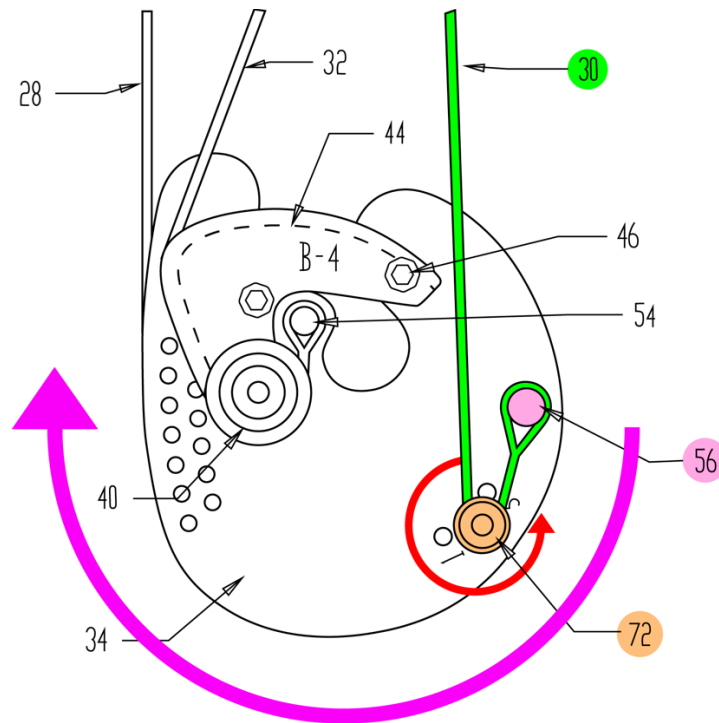
Darlington, Fig. 2 (excerpt, left), Fig. 4C (right).

For the motivations described below, a PHOSITA would have been motivated to modify *Darlington*'s pulley(s) to practice the first rotational direction of power cable found in *Islas* (i.e., a first rotational direction opposite the second rotational direction). The resulting *Darlington+Islas* bow would have thus had a first rotational direction (i.e., the direction its power cable wraps around its capstan) opposite a

second rotational direction (i.e., the direction its pulley rotates when drawn from the brace condition), rendering obvious limitation 1(f).

For illustrative purposes only, two modified figures are presented below exemplifying embodiments of a bow a PHOSITA would have been motivated to create in combining *Darlington* and *Islas*. These figures are not directly presented in *Darlington* but represent possible examples resulting from the proposed modifications to *Darlington*'s bow based on the desirable outward-wrapping power cable configuration disclosed by *Islas*.

As seen in the first exemplary modified pulley below, the *Darlington* bow's anchor 56 is modified as taught by *Islas* such that its power cable wraps outwardly around the capstan 72, (counterclockwise from the illustrated perspective, away from the axis and toward the pulley's periphery). The modified first rotational direction is indicated by a red arrow.

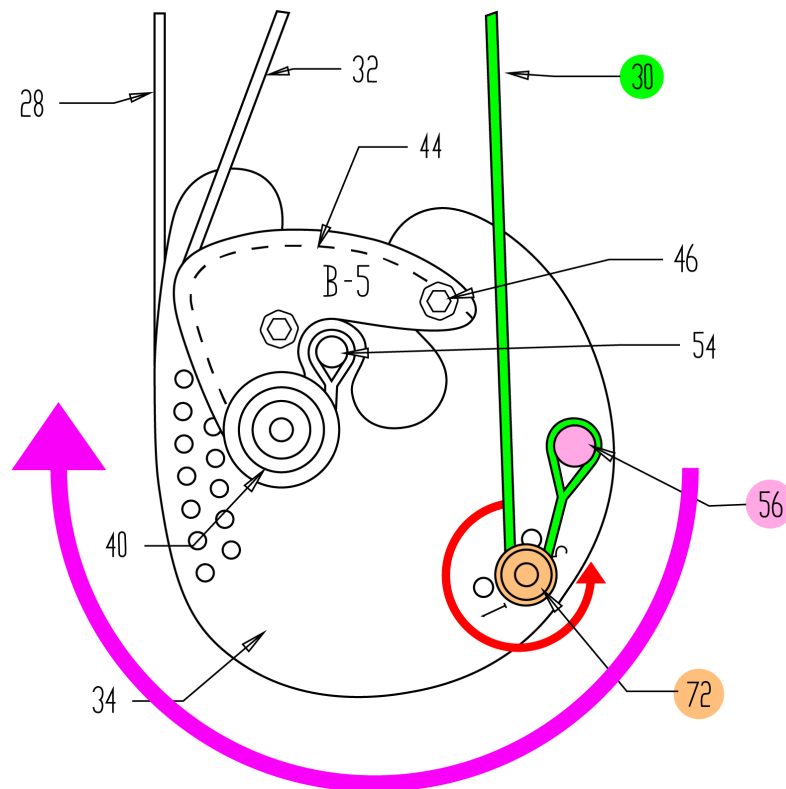


Dec., 58; *see also supra* limitation 1(e). The rotation of the pulley as the bow is drawn (the second rotational direction) remains clockwise, as indicated by the magenta arrow. *Darlington*, 1:55-65, 3:14-34, Figs. 1-2; *Dec.*, 56-58. Beneficially, section 42 present in the original *Darlington* bow is eliminated as unnecessary, simplifying the bow's design and reducing its manufacturing cost. *Dec.*, 59-61. Thus, the proposed combined *Darlington+Islas* bow renders obvious a second rotational direction (clockwise, magenta) that is opposite its first rotational direction (counter-clockwise, red). *Dec.*, 55-61.

The first proposed modified bow illustrated above, as well as the second, alternative example illustrated below, are not intended to be limiting. A PHOSITA would have been capable of designing a wide array of embodiments that modify the

Darlington power cable to wrap around its capstan in the direction opposite its draw rotation as taught by *Islas*, providing any particular draw profile and/or aesthetic desired. *Dec.*, 58. A PHOSITA would have additionally made any other necessary or desired modifications to facilitate this rearrangement of *Darlington's* bow such that the resulting bow would have been operable, such as changing the relative distances between the capstan and terminal, the sizes thereof, the angle of the power cable, and/or the shape of draw length module 44. *Id.*

A second exemplary modification of *Darlington+Islas* illustrated below, with a draw length module 44 specifically designed to accommodate the modified draw profile.



Dec., 58. Here, the draw length module 44 has been replaced with an alternative, as expressly encouraged by *Darlington*, such that the end of the draw length module closest to power cable 30 has been rounded off to improve the take-up of the power cable as the bow is drawn. *Id.* As in the first illustrated modified example, this second example of a modified *Darlington+Islas* bow features a pulley that rotates clockwise as the bow is drawn (magenta arrow), while its power cable wraps around its capstan in the opposite rotational direction (counterclockwise, red arrow). Such an alternatively-shaped draw length module is not necessary to combine *Darlington* and *Islas*, but is an additional example of the numerous configurations available to a PHOSITA to modify *Darlington's* bow pursuant to *Islas*. *Dec.*, 58. As in the first modified figure, *Darlington* bow's anchor 56 has been relocated in the combined *Darlington+Islas* bow to accommodate this altered rotational direction of the power cable. *Id.*

As further explained below, a PHOSITA would have additionally made any other necessary or desired modifications to facilitate this rearrangement of *Darlington's* bow such that the resulting bow would have been operable. *Dec.*, 58.

Motivation to Combine *Darlington* and *Islas*

A PHOSITA would have been motivated, having read *Islas*, to modify *Darlington's* bow such that its power cable wrapped around its capstan in a second rotational direction that is opposite its first rotational direction (i.e., outward, toward

the periphery of the cam) as recited in limitation 1(f) and taught by *Islas* for three primary reasons: (1) it would have increased safety and maintainability, (2) it would have simplified the design, resulting in a reduced manufacturing cost and (3) it would have increased the maximum angular sweep the rotatable member could rotate without obstruction from brace to full-draw.

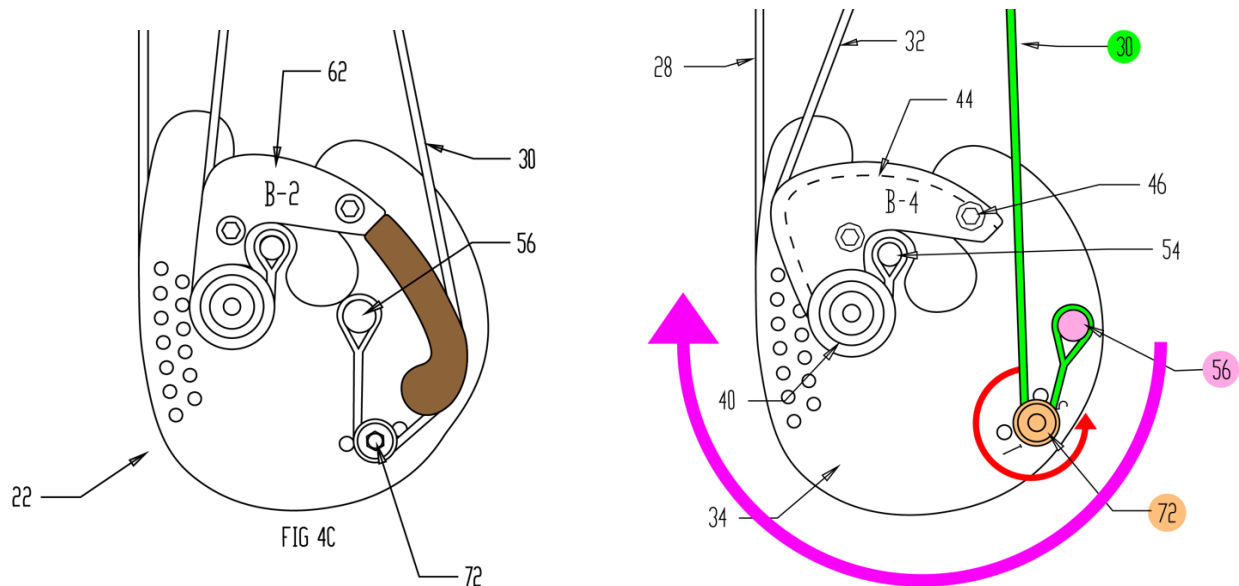
First, a PHOSITA would have appreciated that it was well-known in the field of designing archery bow cams that any contact between a bow's power cables with one another or unintended elements of the bow's pulley (e.g., screws, other cables, or protrusions) would have resulted in unwanted and potentially dangerous effects such as entanglement, abrasion, and fraying. *Dec.*, 59-64 *citing* numerous prior art references including *Browning Manual*, *Bear Manual*, *Grace*, and *Schaar*. These effects were known to increase the risk of user injury and/or catastrophic damage to the bow due to power cable failure. *Id.* As such, a PHOSITA would have sought design improvements that would have reduced the likelihood of contact between power cables and any other portion of the bow (including the other power cable). *Id.* A PHOSITA also would have understood that wear naturally occurs as a cable rides in and out of a track as the bow is drawn. *Dec.*, 59. The proposed modification would have reduced such wear by desirably increasing the longevity of the power cable.

Additionally, a PHOSITA would have appreciated that this unwanted contact between the cables would have resulted in an array of other undesirable effects. For

example, any unintended cable contact would have reduced the maximum force imparted to an arrow, undesirably reducing the accuracy, range, and/or lethality of the bow. *Dec.*, 59-61. A PHOSITA would have recognized that bows providing a higher arrow velocity were generally more desirable and command a higher price. *Id.* Thus, a PHOSITA would have been further motivated to modify *Darlington's* bow according to *Islas's* design to reduce the chance of such contact. *Id.* A PHOSITA would have also known that power cables must be periodically replaced due to wear, and cable contact would have reduced the lifespan of the cables. *Id.* A PHOSITA would have readily understood that, as a result of requiring less maintenance, the ongoing cost of owning and using the bow would have been desirably decreased by the modification, and the bow's maintainability would have been improved. *Id.*

For these reasons, a PHOSITA, having reviewed *Islas*, would have been motivated to modify *Darlington's* bow to reduce the likelihood of unwanted cable contact, simplifying its design by wrapping its power cable *outwards* around its capstan (intermediate post 72). *Dec.*, 55-64. As a result, the spacing between the terminal end of its power cable from its other cables would have been desirably increased. *Dec.*, 62. The simplified design would have eliminated the need for section 42, reducing the manufacturing cost of the bow. *Id.* For comparison, Fig. 4C

is presented below alongside one exemplary modified design previously discussed, with section 42 highlighted brown:



Darlington, Fig. 4C (annotated, left), *Darlington*'s lower pulley, proposed exemplary modification (right). The increased separation of the power cable from the other cam elements would have desirably reduced the likelihood of the unwanted effects arising from cable contact described above.

A PHOSITA would have also recognized that the elimination of section 42 in the modified *Darlington+Islas* design would have increased the maximum amount the bow's pulleys would have been able to rotate without contacting other portions. *Dec.*, 63. As explained by Mr. Lange, the modified design would have allowed for an increase in the maximum angular sweep that was geometrically feasible for the pulley from brace to full-draw, desirably increasing the maximum arrow velocity the bow was capable of producing for a given cam size. *Id.* The '989 Patent itself touts

the desirability of such a design, stating that a design in which the power cable wraps around the capstan in the *same* direction as the pulley rotates when drawn “limits the amount of rotation that can be achieved. Having the cable 24 wrap around the capstan and extend in a direction opposite of cam rotation provides for some added draw capability.” ’989 *Patent*, 5:15-25. Thus, a PHOSITA would have recognized that modifying *Darlington*’s design pursuant to *Islas*’s cable-wrapping direction would have desirably improved *Darlington*’s bow. *Dec.*, 59-63.

Notably, *Darlington* explains that intermediate post 72 is “adjustably positionable” to configure the stresses in the limbs during draw. *Darlington*, 3:35-4:20; *Dec.*, 58. Having read this description, a PHOSITA would have found it obvious and appropriate to modify *Darlington*’s bow pursuant to *Islas*’s disclosure, relocating intermediate post 72 (capstan) such that first power cable 31 wraps around post 72 outwards, toward the periphery of the pulley for the motivations discussed above of improving safety, reducing maintenance costs while simplifying the design, and increasing the maximum amount the pulleys were able to rotate from brace to full-draw. *Dec.*, 58-62. Both the simple nature of the modification and the express intent of *Darlington* towards modification would have supported a reasonable expectation of success for a PHOSITA to make the combination without undue experimentation. *Id.* Specifically, a PHOSITA would have had a reasonable expectation of success for the combination of *Darlington* and *Islas* because all of the

physical components necessary were already found in *Darlington*, and the modification per *Islas* would have only required minor reconfigurations of those physical components. *Id.* A PHOSITA would have made any other necessary modifications to facilitate the rearrangement of *Darlington*'s bow to reflect *Islas*'s design such that the resulting bow would have been operable, such as changing the relative distances between the capstan and terminal and/or the relative size of any bow element. *Id.* Such modifications would have been within the level of skill of a PHOSITA, using only physical components already present in *Darlington*. *Id.*

Similarly, as discussed above, *Darlington* expressly teaches that portions of its removable draw length module (e.g. draw length module 44 and section 42) are intended to be removable (e.g., via screws) and “replaceable” with components of alternative shapes corresponding to any desired draw cycle. *Darlington*, 3:38-4:20 (*pinpoint* at 3:60-64 describing elements 60,62,64 of Figs. 3A-D corresponding to element 44 of Fig. 2), 1:32-38, 2:50-65, 4:7-20, Figs. 2-5C; *Dec.*, 58. Having read this description, a PHOSITA would have been motivated to modify *Darlington*'s bow pursuant to *Islas*'s disclosure, adjusting portions of its removable draw length module (e.g. removing section 42 and/or utilizing an alternatively-shaped draw length module 44) such that its first power cable 30 aligns with the mapped “cam track” (comprising cable groove 50b) as the bow is drawn. *Id.* A PHOSITA would have had the skills necessary and the motivation to replace module 44 with an

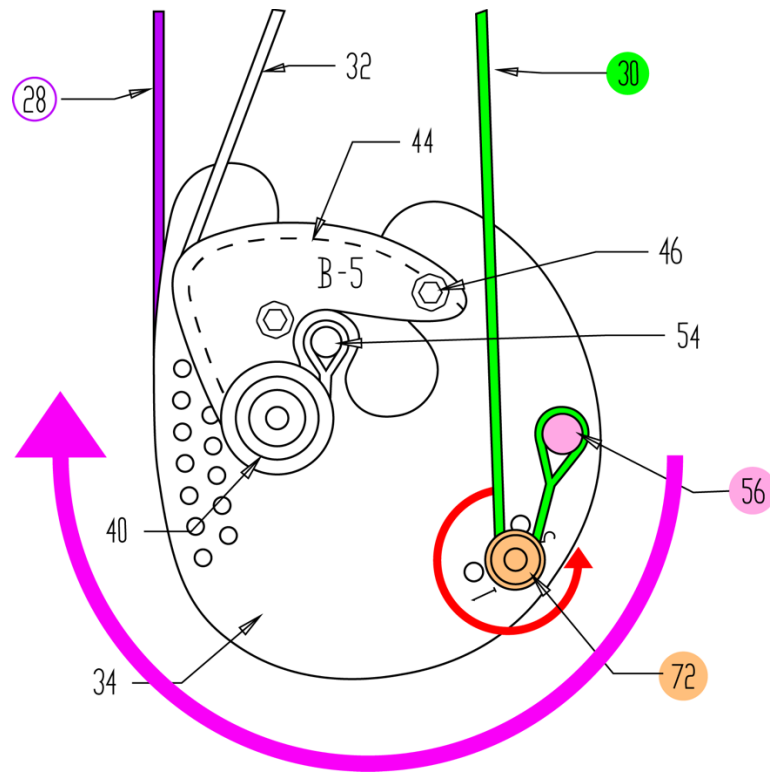
alternative module 44 sized and/or shaped to facilitate the desirable combination of *Darlington* and *Islas*. *Id.*

Darlington states that cable groove 50a-c “preferably is substantially continuous...meaning that there are no more than small gaps between the cable groove sections that do not affect smooth drawing of the bow” and specifically that “section 50b preferably is smooth and arcuate, without any abrupt steps or discontinuations that would affect the ‘feel’ of the bow as it is drawn.” *Darlington*, 2:61-65, 3:61-64; *Dec.*, 64. A PHOSITA would **not** have understood this disclosure as a detriment to the combination of *Darlington* and *Islas*, nor as a teaching away from the combination. *Id.*

Notably, *Darlington* provides these descriptions as being merely “preferable” for particular embodiments described; such details are neither required for operability nor necessarily present in all embodiments. *Id.* Presenting an embodiment as a preference does not constitute teaching away. *See DePuy Spine, Inc. v. Medtronic Sofamor Danek, Inc.*, 567 F.3d 1314, 1327 (Fed. Cir. 2009) (“A reference does not teach away . . . if it merely expresses a general preference for an alternative invention but does not ‘criticize, discredit, or otherwise discourage’ investigation into the invention claimed.” (quoting *In re Fulton*, 391 F.3d 1195, 1201 (Fed. Cir. 2004))). A PHOSITA would have instead recognized alternative embodiments would have warranted alternative configurations, especially for the

significant benefits detailed above regarding improved safety, reduced maintenance costs, simplified design, and increased maximum angular sweep of the pulleys from their brace orientation to their fully-drawn orientation. *Dec.*, 58-64.

Additionally, a PHOSITA would have been capable and motivated to modify *Darlington's* design to wrap outward and towards the periphery of the rotatable member as taught by *Islas*, while maintaining *Darlington's* desired small gaps between cable groove sections that do not affect the bow's smooth cam track. *Id.* A PHOSITA would have recognized that removing section 42, as proposed, would have reduced concerns regarding discontinuous draw due to gaps between the cable groove sections (because there were fewer sections between which for gaps to exist), improving the design and further motivating the combination. *Dec.*, 64. Additionally, embodiments of the combined *Darlington+Islas* bow a PHOSITA would have been motivated to produce would have specifically provided a cam track 50b that is smooth and arcuate, without any abrupt steps or discontinuations, as in the example combination reproduced below:

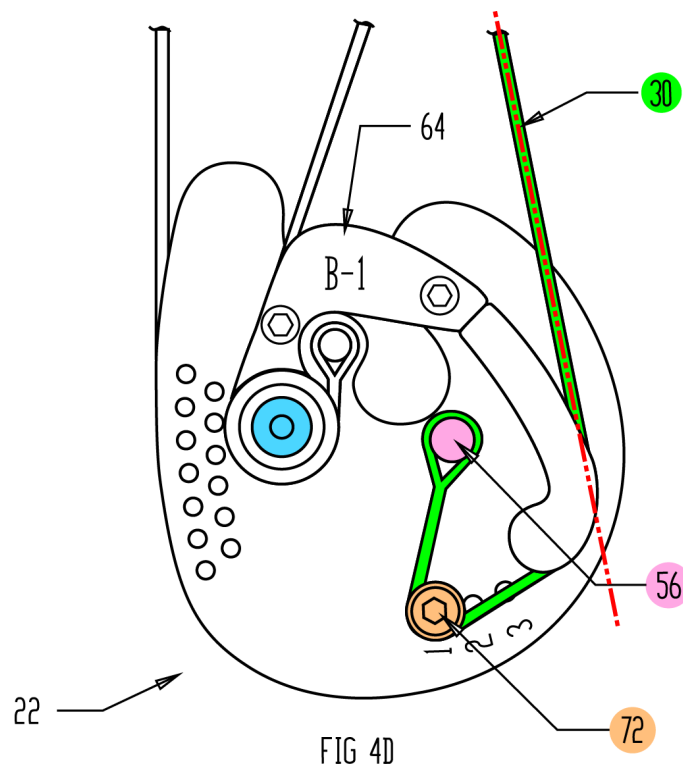


A PHOSITA would have recognized that the exact placement, arrangement, and relative sizes of the elements described and illustrated above (e.g. power cable, capstan, terminal, draw length module, screws, etc.) are design choices, obvious to a PHOSITA to modify to accommodate any desired configuration or embodiment.

58-61. A PHOSITA would have been capable and motivated to perform any necessary detailed reshaping, resizing, or relocation of these elements to enable an operable modification of *Darlington*'s bow to wrap its power cable outwards around its capstan, as described and motivated above. *Id.*

Claim 1(g): “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.”

Darlington alone teaches or at least renders obvious an archery bow having an elongate straight portion of a power cable defining a plane. As discussed above regarding limitation 1(d)(ii), *Darlington*'s bow includes a portion exiting from the first rotatable member that straightens out to form a long, straight line extending toward the second rotatable member, annotated below with a dashed red line in an annotated Fig. 4D:

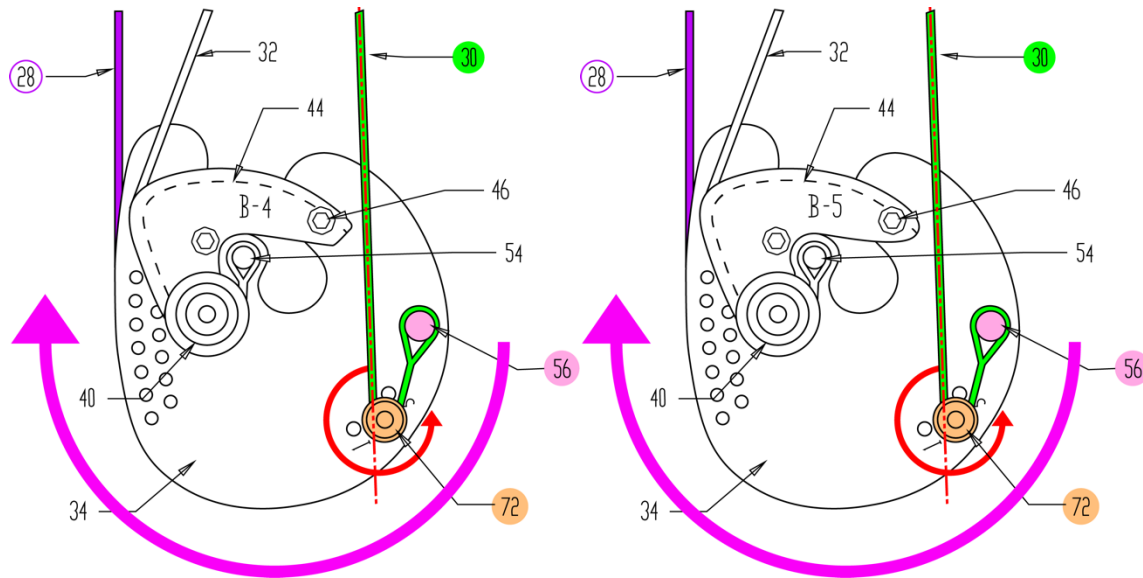


Darlington, Fig. 4D (annotated), *Darlington*, 1:55-2:2, 3:20-37, *see also supra* Limitation 1(d)(ii). Thus, a PHOSITA would have recognized a plane including the red dot-dash line above teaches the recited “plane” defined by the elongate straight portion. *Dec.*, 65. However, prior to modification with *Islas*, *Darlington*'s first axle

(highlighted light blue above) and terminal (highlighted pink above) are on the same side of this plane (running along the red dot-dash line).

As discussed above, a PHOSITA would have been motivated to modify *Darlington's* bow pursuant to *Islas* such that the power cable of the *Darlington+Islas* bow wraps around the capstan in a second direction that is outward and away from the center of the pulley. As explained above for limitation 1(f), this would have avoided potential cable entanglement or abrasion and increased the safety of the bow and reduced the frequency of the bow's required maintenance while increasing its maximum draw length. A full description of the modification and motivations thereof is included above for limitation 1(f) and incorporated herein by reference.

As a result of this modification, *Darlington* in view of *Islas* renders obvious limitation 1(g). Specifically, as seen in each of the exemplary modified figures described above regarding limitation 1(f) and reproduced below, the first axle and terminal (pink) of the *Darlington+Islas* bow are located on opposite sides of a plane (indicated by the superimposed dashed red line) defined by the elongate straight portion of power cable 30 (red):



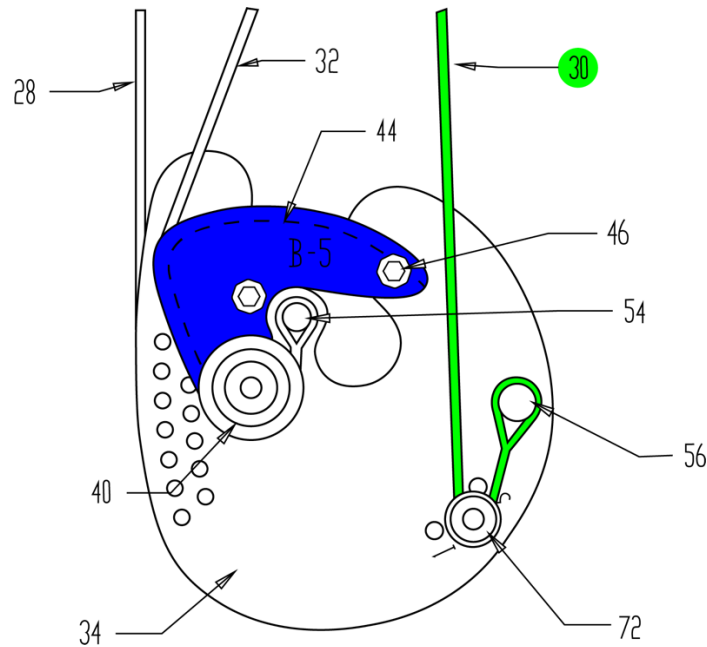
Dec., 65. Note that each of the above examples are based on Fig. 2 of *Darlington*, which illustrates the bow in the brace condition. *Darlington*, Fig. 2, 3:14-15; Dec., 65.

As explained regarding limitation 1(f), the above figures are not found in *Darlington* but are non-limiting example arrangements of a *Darlington+Islas* bow. Rather, they are as examples of possible outcomes of a PHOSITA's modifications to *Darlington* pursuant to the desirable configuration taught by *Islas*.

2. Claim 2

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

As discussed above regarding limitation 1(f), a PHOSITA would have been motivated to combine the disclosures of *Darlington* and *Islas*, one example combination of which is reproduced below.



Supra, Section V.A.1(f). The power cable 30 of the *Darlington+Islas* bow as proposed is not located in cam track 44 when the bow is in the brace condition. *Dec.*, 66. A motivation to combine *Darlington* and *Islas* is provided above regarding limitation 1(f) and incorporated herein by reference.

3. Claim 3

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

The modified *Darlington+Islas* bow includes a pulley 22 with a first axle 40, a cam track 44, and a terminal 56. *Supra*, Section V.A.1(f). *Darlington*’s first axle 20 (within hub 40) abuts its cam track 44, each of which is spaced apart from terminal 56.

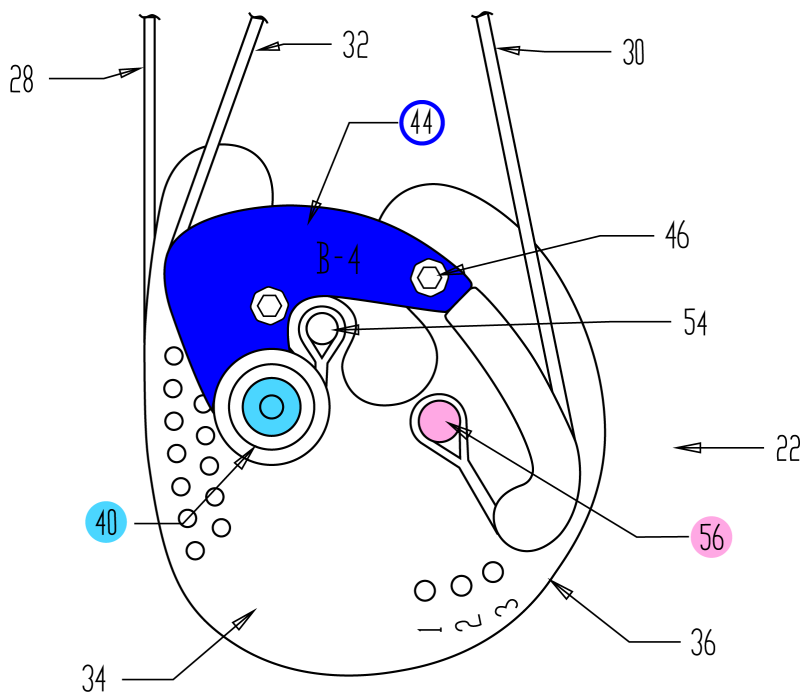
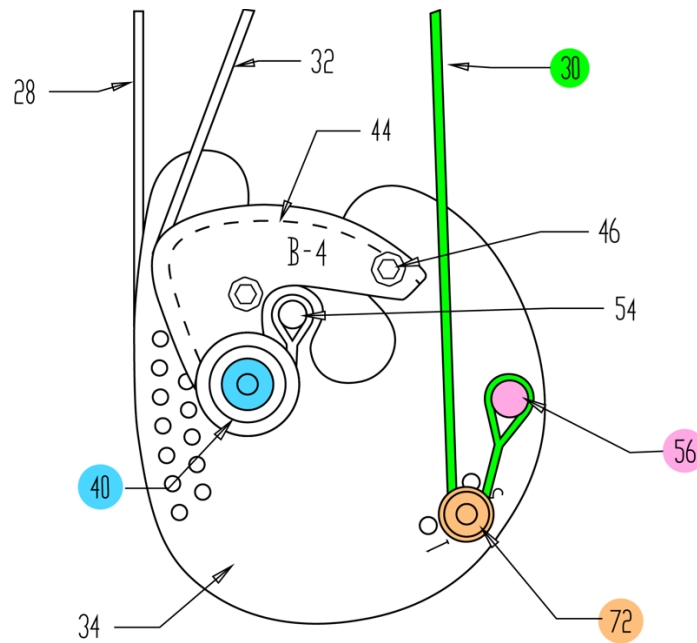


FIG 4A

Darlington, Fig. 4A (annotated). Thus, though the figures are not necessarily to-scale, a PHOSITA would have recognized *Darlington* alone teaches or at least renders the distance between the axle and the terminal is greater than the distance between the axle and the cam track. *Id.*; *Dec.*, 67.

Further, as seen below in the exemplary modified figures previously described, terminal 56 of the *Darlington+Islas* bow is positioned *even further* from the first axle than in the unmodified *Darlington* bow of Fig. 4A above.



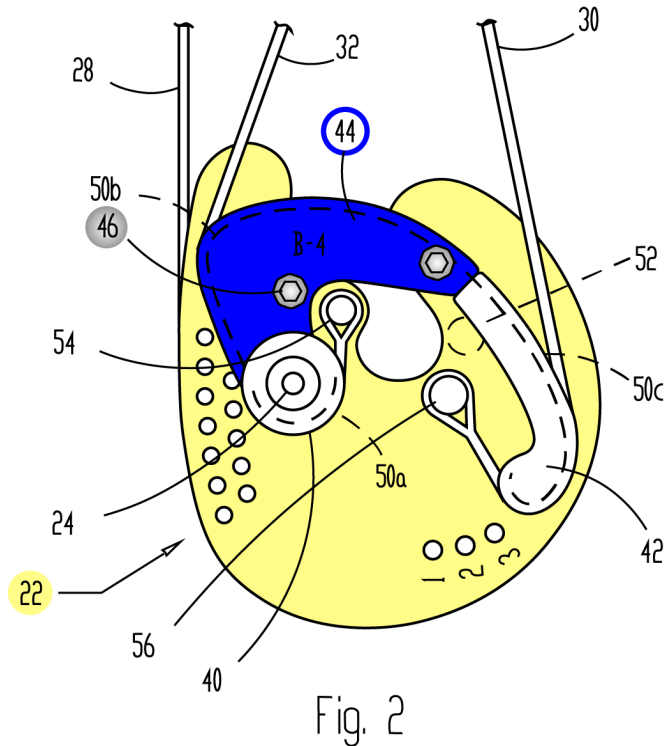
Thus, the *Darlington+Islas* bow also renders claim 3 obvious. *Dec.*, 67. A motivation to combine *Darlington* and *Islas* is provided above and incorporated by reference herein. *Supra*, Section V.A.1(f). Additionally, a PHOSITA would have found it obvious to position the first axle, terminal, and cam track into any particular arrangement, including specifically arrangements in which a distance between the first axle and the terminal is greater than a distance between the first axle and the cam track as a design choice. *Id.*

4. Claim 4

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.”

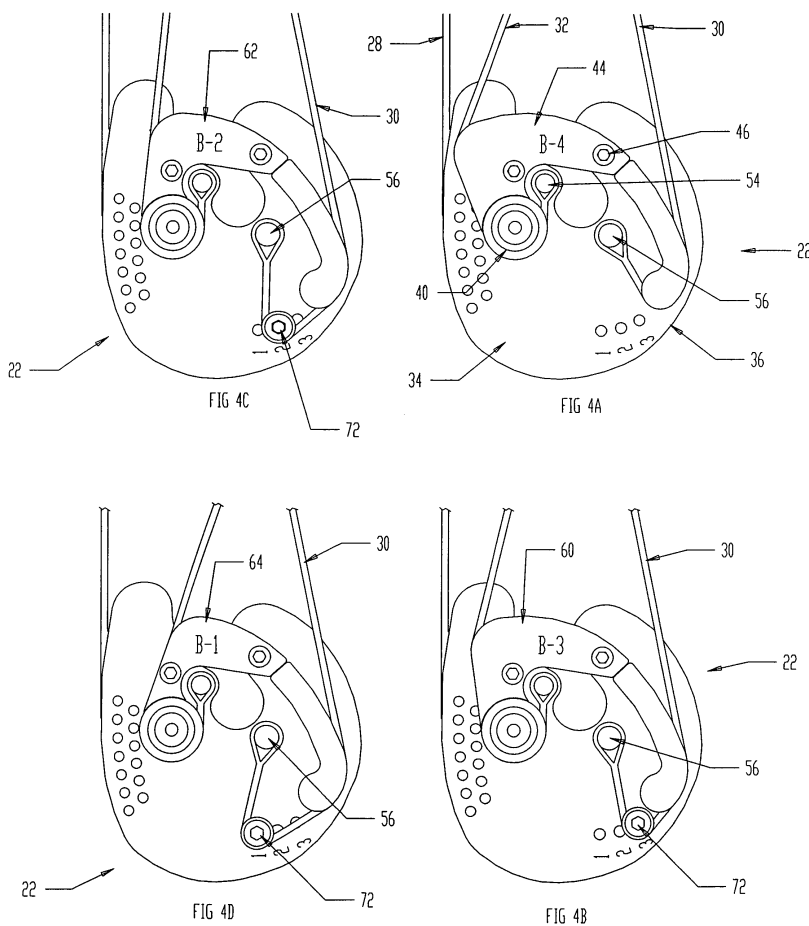
As discussed above, *Darlington* teaches a bow with a removable draw length module 44 (the mapped cam track) mounted on flat base 34 of each of the upper and lower pulleys 18, 22. *Darlington*, 2:50-65; Figs. 1-2. Specifically, *Darlington*

explains “draw length module 44 is removably mounted on base 34, such as by screws 46[.]” *Darlington*, 2:54-56. For example, in annotated Fig. 2 below, draw length module 44 (annotated blue) is attached to the base of pulley 22 (yellow) by screws 46 (grey):



Darlington, Fig. 2 (annotated).

Darlington describes alternative draw length modules 60, 62, and 64 having “openings 66 for receiving screws 46 (FIG. 2) to mount the draw length module on base 34[.]” *Darlington*, 3:38-43; Figs. 3A-3D. These alternative draw length modules are shown mounted on lower pulley 22 (the mapped first rotatable member) in Figs. 4A-4D below:

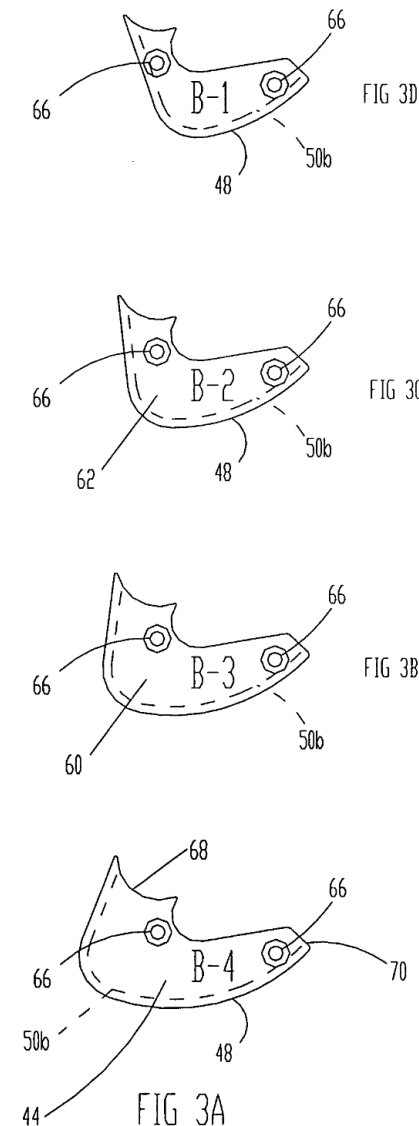


Darlington, Figs. 4A-4D. Thus, *Darlington*'s draw length modules 44, 60, 62, and 64 teach modules attached to lower pulley 22, as claimed.

5. Claim 7

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

As discussed above in claim 4, *Darlington*'s bow includes “replaceable draw length module 44 of FIG. 2[.]” *Darlington*, 3:38-4:6. The various shapes of replacement draw length modules 60, 62, and 64 are illustrated in Figs. 3A-3D:

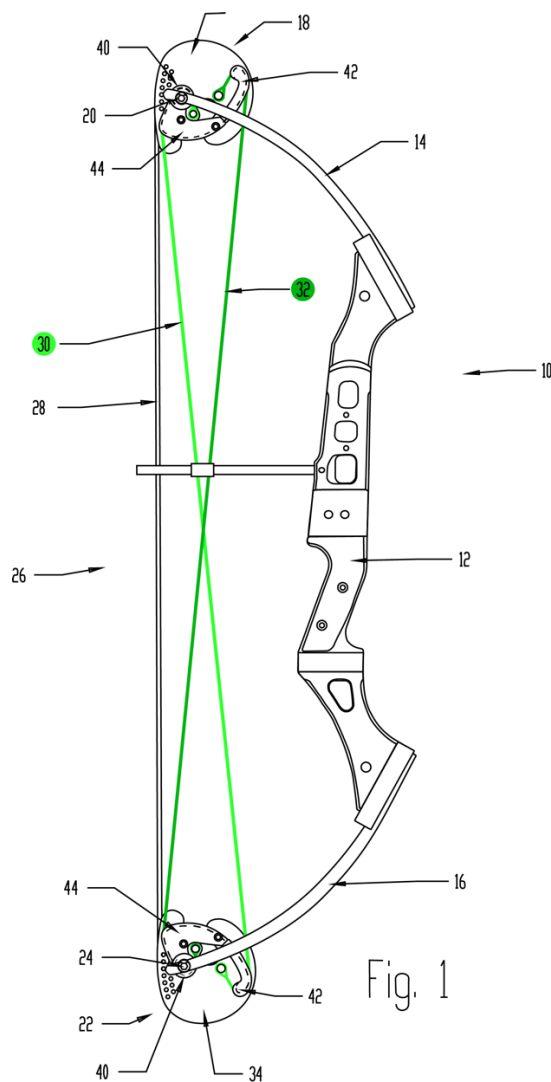


Darlington, Figs. 3A-3D. Thus, *Darlington* teaches replaceable draw length module 44 is interchangeable with draw length modules having different shapes (e.g., replacement draw length modules 60, 62, and 64).

6. 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,”

Darlington's bow includes two pulleys (18, 22) and a “cable arrangement 26” that includes “a bowstring cable 28 and a pair of power cables 30, 32 extending between pulleys 18, 22.” *Darlington*, 2:32-49; Fig. 1. As explained regarding limitations 1(c)-1(d)(i), *Darlington's* bowstring cable 28 teaches a “drawstring” while power cable 30 teaches “a [first] power cable.” *Supra*, V.A.1(c)-(d)(i). Further, *Darlington's* cable 32 teaches a “second power cable,” annotated below darker green:



Darlington, Fig. 1 (annotated).

As discussed regarding claim 1(b)(i), *Darlington*'s bow includes two pulleys: an upper pulley 18 (the mapped "second rotatable member") and a lower pulley 22 (the mapped "first rotatable member"). *Supra*, V.A.1(b)(i). Because *Darlington* explains that "[l]ower pulley 22 is essentially a mirror image of [upper] pulley 18" (*Darlington*, 3:8-13), the discussion of the components of lower pulley 22 from claim 1(b)(iii)-(iv) is incorporated herein by reference. *Supra*, V.A.1(b)(iii)-(iv). Specifically, Fig. 2 below illustrates *Darlington*'s teachings that **both** pulleys 18 and 22 include a draw length module 44 (dark blue) with groove section 50b (orange) and an anchor 56 (pink). The draw length module 44 with groove section 50b on upper pulley 18 teach the second cam track and second terminal, as claimed. *Darlington*, 2:50-3:13; Figs. 1-2.

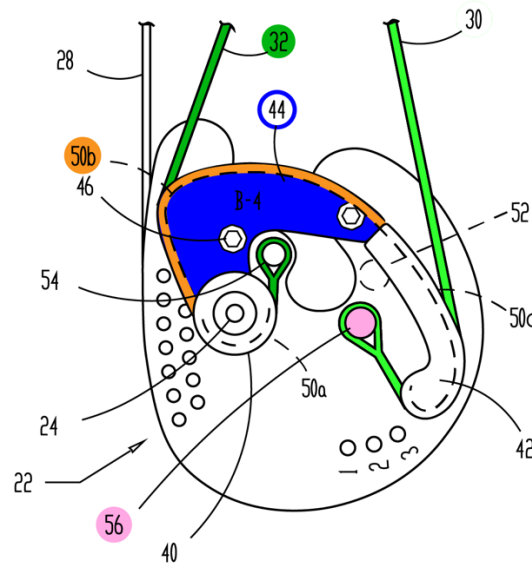
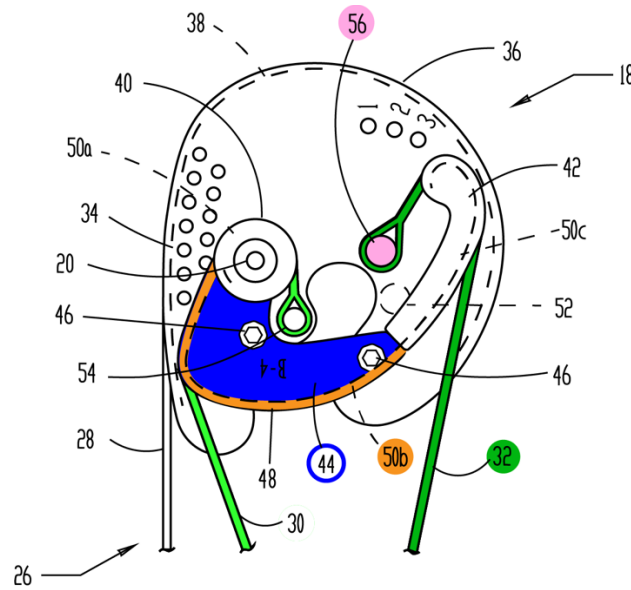
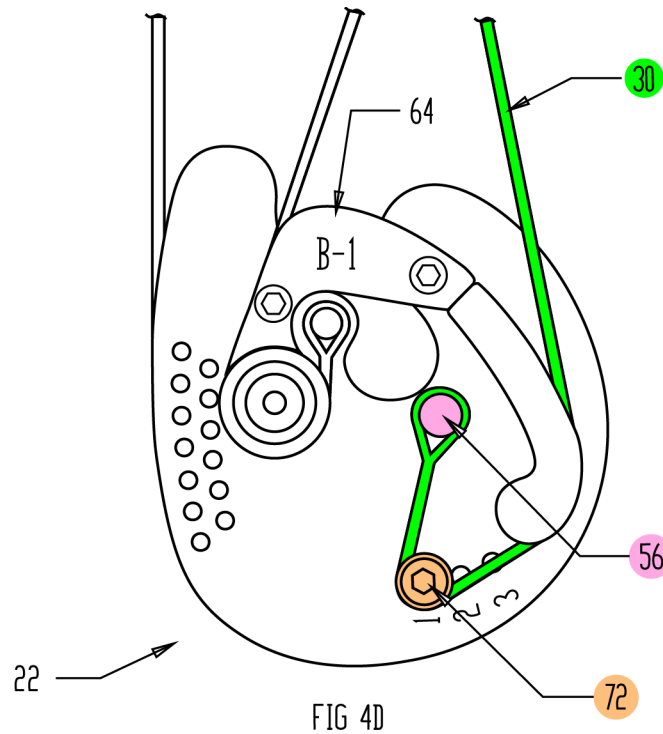


Fig. 2

Darlington, Fig. 2 (annotated), 3:6-8 (“Power cable 32 extends from an anchor 56 on base 34 through at least a portion of cable groove section 50c and thence toward pulley 22.”).

Darlington’s intermediate post 72 (capstan) is not illustrated in Fig. 2 but is shown on lower pulley 22 in annotated Fig. 4D below. *Supra*, V.A.1(b)(iv).

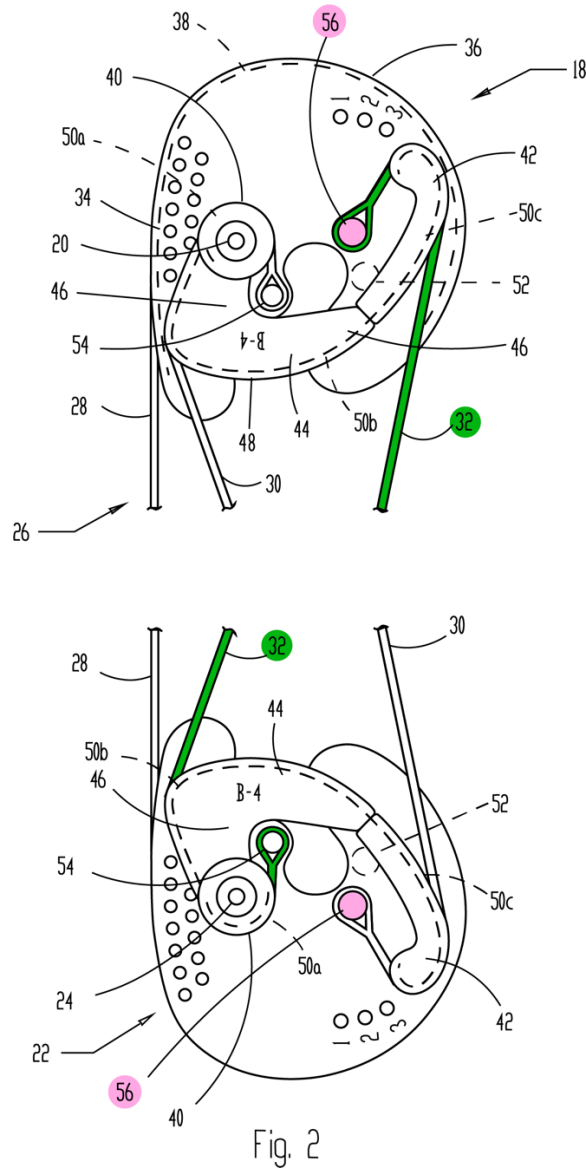


Darlington, Fig. 4D (annotated), 3:65-4:6, 1:42-50, *see also* Figs. 1, 2, 4A-5C (illustrating alternative configurations); *Dec.*, 69. Again, since “lower pulley 22 is essentially a mirror image of [upper] pulley 18” (*Darlington*, 3:8-13), a PHOSITA would have understood embodiments of *Darlington* would include such posts 72 on each of pulleys 18, 22. *Dec.*, 70. Thus, *Darlington* teaches claim 8(a).

Claim 8(b): “the second power cable attached to said second terminal and extending toward the first limb,”

Darlington states, “Power cable 32 extends from an anchor 56 on base 34 through at least a portion of cable groove section 50c and thence toward pulley 22.” *Darlington*, 3:6-8. In annotated Fig. 2 below, power cable 32 (annotated in dark green - mapped second power cable) is attached to anchor 56 on upper pulley 18

(annotated in pink - mapped second terminal) and extends towards lower pulley 22 that is supported by lower limb 16 (mapped first rotatable member).

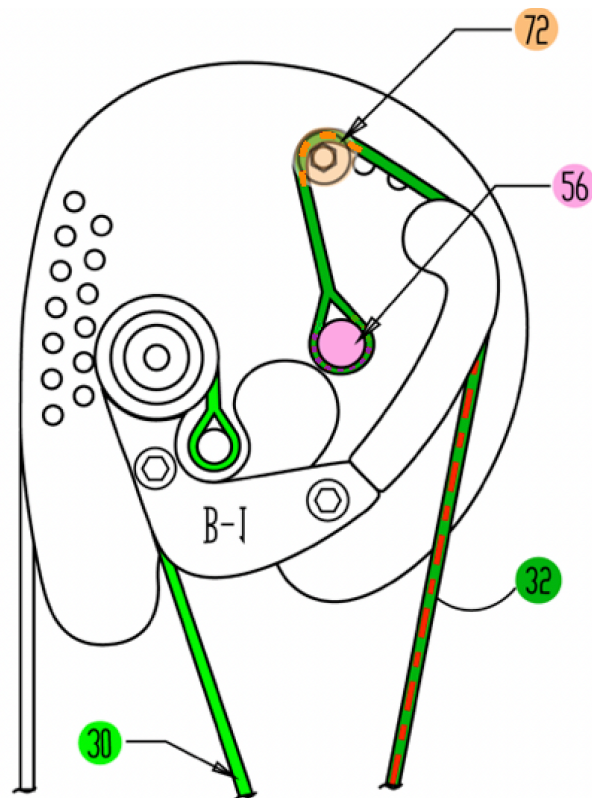


Darlington, Fig. 2 (annotated). Thus, *Darlington* teaches claim 8(b).

Claim 8(c): “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;”

As discussed above in limitation 1(d)(ii), *Darlington's* power cables include each of the recited portions. *Supra*, V.A.1(d)(ii). Again, since *Darlington* states that “lower pulley 22 is essentially a mirror image of [upper] pulley 18” (*Darlington*, 3:8-13), a PHOSITA would have recognized that upper pulley 18 teaches and renders obvious each of the recited cable portions recited in limitation 8(c) regarding the second power cable in the same manner as discussed above regarding limitation 1(d)(ii) regarding the first power cable.

For discussion, an annotated figure in which lower pulley 22 of Fig. 4D has been mirrored and annotated is produced below to illustrate the recited portions on upper pulley 18.

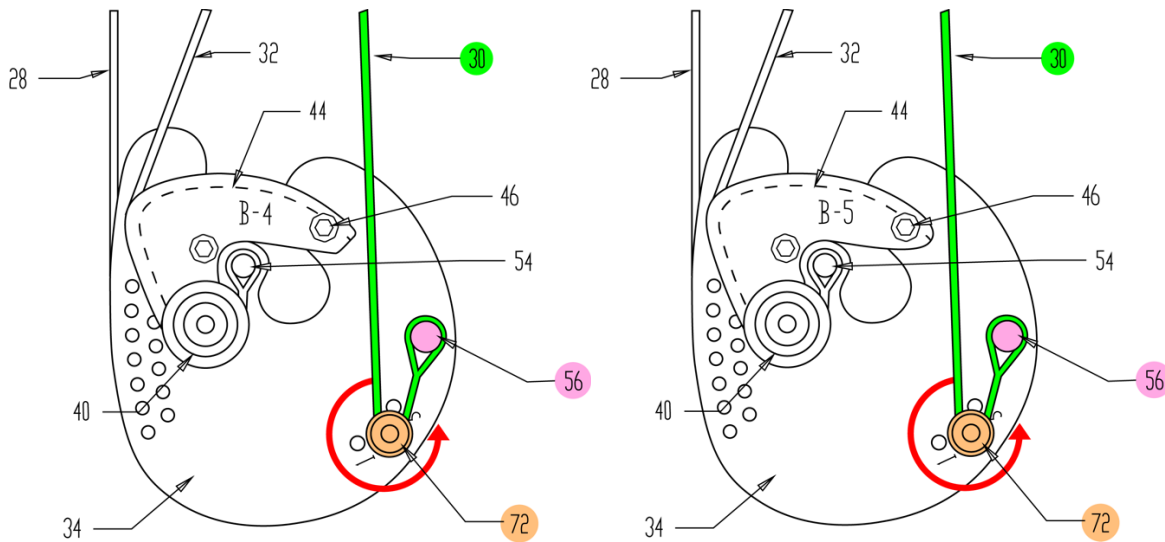


Darlington, Fig. 4D (annotated).

The portion of *Darlington*'s power cable 32 (dark green) near upper pulley 18 at least includes an "elongate straight portion located near said second rotatable member," annotated with a dot-dashed red line. Similarly, *Darlington*'s power cable 32 wraps around the capstan (intermediate post 72, orange) and terminates at the terminal 56 (highlighted in pink), teaching the recited "second capstan portion" (dashed orange line) and the recited "second anchor portion" (dashed purple line) respectively. *Darlington*, 3:6-8, 1:55-2:2, 3:20-37, Figs. 4A-4D, 5A-C; *Dec.*, 69-70. Thus, *Darlington* teaches claim 8(c).

Claim 8(d): "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"

As described above regarding claims 1(e)-(f), *Darlington* teaches that the first power cable 30 wraps around a capstan on lower pulley 22 in a first rotational direction as the power cable is traversed from the elongate straight portion to the terminal portion when the bow is in a brace condition. *Supra*, V.A.1(e). *Darlington* as modified by *Islas* in claim 1(f) discloses the first rotatable member (mapped lower pulley 22) rotates in a second rotational direction that is opposite the first rotational direction, the rationale for which is incorporated herein. *Supra*, V.A.1(f). The following modified Figures are provided for reference.



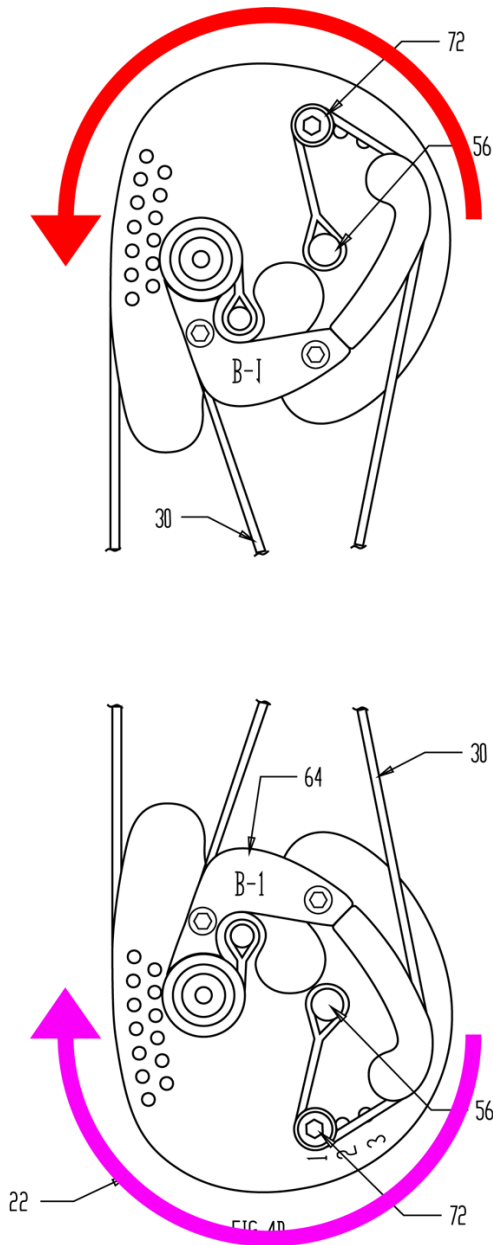
Again, since *Darlington's* “lower pulley 22 is essentially a mirror image of [upper] pulley 18” (*Darlington*, 3:8-13), the above figures would be mirrored for upper pulley 18. A PHOSITA would have recognized that the modification to *Darlington* would have resulted in second power cable 32 wrapping around capstan 72 in the clockwise direction (mapped second rotational direction) as the second power cable is traversed from the second elongate straight portion to the second terminal portion. *Dec.*, 69.

For the same reasons as discussed in limitation 1(f), the upper pulley 18 (mapped second rotatable member) of *Darlington*, as modified by *Islas*, would wrap power cable 32 (mapped second power cable) 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. *Supra* V.A.1(f). Thus, *Darlington+Islas* discloses claim 8(d). *Dec.*, 69-70. A motivation to combine

Darlington and *Islas* is provided above regarding limitation 1(f), and is incorporated herein by reference.

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

As presented previously in limitation 1(f), when *Darlington*’s bow is drawn from the brace condition, lower pulley 22 (mapped first rotatable member) rotates in a second rotational direction (e.g., clockwise) that is opposite the first rotational direction (e.g., counterclockwise). *Supra*, V.A.1(f). In annotated Fig. 4D below, *Darlington*’s upper pulley rotates in the counterclockwise direction (red arrow - mapped first rotational direction) and the lower pulley rotates in the clockwise direction (magenta arrow – mapped second rotational direction):



Darlington, Fig. 4D, modified and annotated.

Darlington expressly states that, “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.” *Darlington*, 3:14-19, Figs. 1 and 1A. Thus, each of *Darlington* alone and *Darlington* as modified by *Islas* teaches and renders obvious claim 8(e). *Dec.*, 69-70. A motivation to combine *Darlington* and *Islas* is provided above regarding limitation 1(f), and is incorporated herein by reference.

7. Claim 9

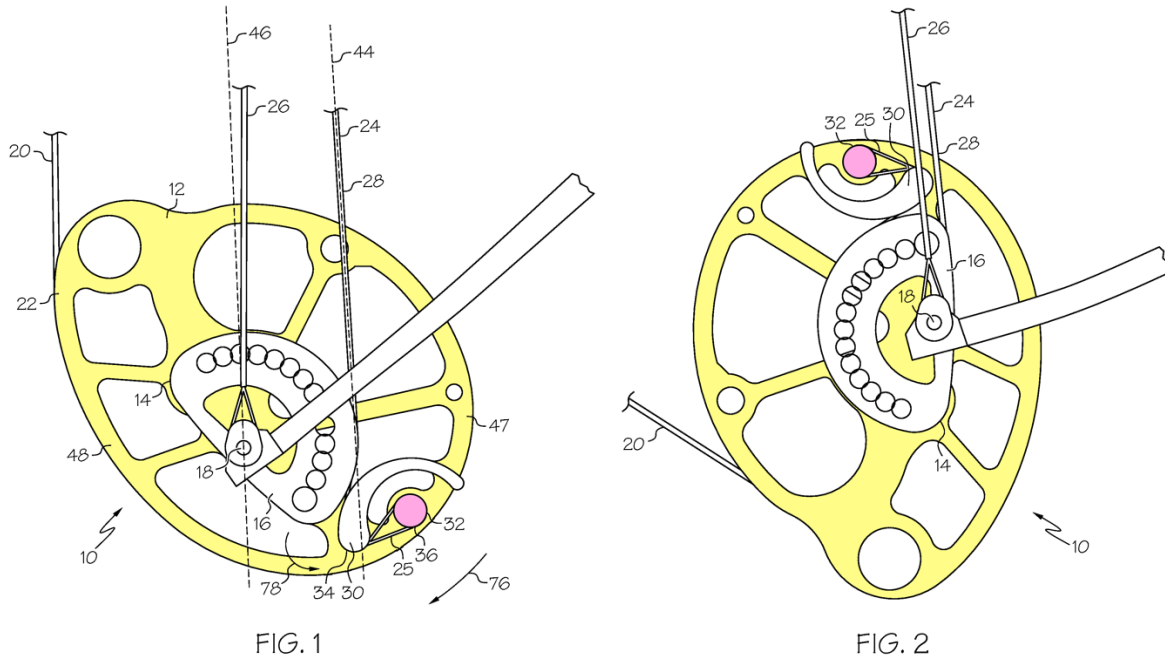
Claim 9: “The archery bow of claim 8, wherein said second rotatable member comprises a mirror image of said first rotatable member.”

As discussed above in limitation 1(b)(i), *Darlington* explains that its upper and lower pulleys are “similar in function” and may be “near mirror images of each other.” *Darlington*, 2:42-47, 3:8-13. Thus, *Darlington* teaches claim 9.

8. 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.”

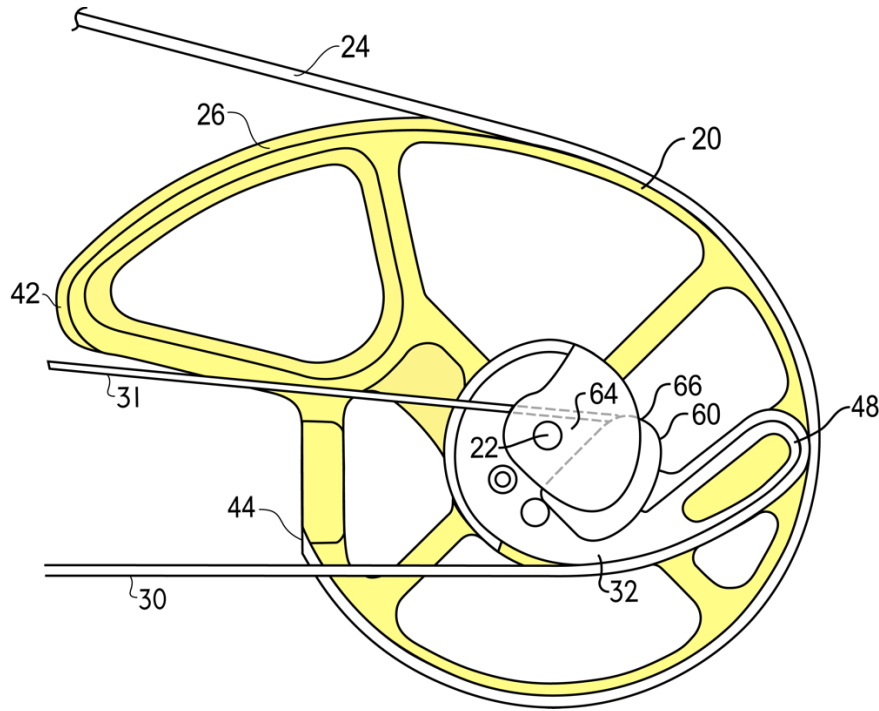
The ’989 Patent describes rotatable members having central voids, leaving behind a thin peripheral edge upon which terminal 32 is located.



'989 Patent, Figs. 1, 2 (annotated). A PHOSITA would have recognized the “outer peripheral structure” of claim 10, upon which the terminal is located, at least includes the thin edge structure illustrated in Figs. 1 and 2 above resulting from the inclusion of holes in the '989's rotatable members. *Dec.*, 71.

Islas's Cam Includes “Cutouts”

Islas teaches a bowstring cam member 20 that is described as advantageously having “cutouts and spokes to make it light in weight,” as shown in Fig. 1 below:



Islas, Fig. 1 (annotated), [0029]; *Dec.*, 72. As a result, *Islas*’s rotatable members, like the ’989’s, provide outer structures formed of the material remaining at the periphery, teaching the “outer peripheral structure” of the ’989 Patent.

Modifying *Darlington*’s pulleys 18, 22 to include *Islas*’s material-removing “cutouts” would have constituted a combination of prior art according to known methods (reducing material used in rotatable members by introducing cutouts) to yield a predictable result of desirably lower-weight cams, and thus would have been obvious and motivating to a PHOSITA. *Dec.*, 72. A PHOSITA would have been motivated to include the “cutouts and spokes” taught by *Islas* in *Darlington*’s pulley to make the pulleys, and thus the bow itself, “light in weight,” especially in light of *Islas*’s express teaching the “cutouts serve to relieve some of the mass of the cam

member, reducing the rotational inertia without any sacrifice of rigidity.” *Islas*, [0029]; *Dec.*, 71-72.

A PHOSITA would have also recognized a lower-mass bow is easier to carry, hold up (particularly in the drawn position) and would have ultimately conserved the amount of material required to manufacture the bow (reducing financial overhead and thereby increasing the profitability of the bow), motivating the combination. *Dec.*, 72. Modifying *Darlington*’s pulleys to include *Islas*’s cutouts would have been within the level of ordinary skill for a PHOSITA, as such designs were common and required only reduction of material already present. *Id.* A PHOSITA would therefore have had a reasonable expectation that modifying *Darlington*’s pulleys with *Islas*’s cutouts would have been successful. For the same reasons, a PHOSITA would have had a reasonable expectation for the combination’s success at least because the techniques required (removing material, selecting appropriate material, choosing an appropriate location for the terminal) were well-known techniques widely-used in the archery field. *Id.* A PHOSITA would have expected the performance of *Darlington*’s pulleys to improve with *Islas*’s cutouts since *Islas* touts that the cutouts reduce “the rotational inertia without any sacrifice of rigidity.” *Islas*, [0029]. Thus, the bow of *Darlington+Islas* modified to include *Islas*’s weight-reducing cutouts renders obvious the claimed “outer peripheral structure.” *Dec.*, 72.

Incorporating *Islas's* cutouts into *Darlington's* pulley reduces available placements for the power cable's terminal. A PHOSITA would have recognized the terminal cannot be placed on a void of the cutout, limiting the possible terminal placement locations to one of a finite number of identifiable, predictable options, including the center structure of the cam, the spokes, or the outer peripheral structure. *Dec.*, 72. Since the modified *Darlington+Islas* in claim 1(f) above already places the terminal near the pulley periphery (*Supra*, V.A.1(f)), a PHOSITA would have expected the terminal to be located on the outer peripheral structure. *Id.* A PHOSITA would have considered placing the terminal on the “outer peripheral structure” of the *Darlington+Islas* pulley an obvious location to try, providing stability and tension to the power cable. *Id.* Similarly, a PHOSITA would have located the other elements necessary to the operation of the *Darlington* bow (including those mapped above regarding claim 1) on the *Darlington+Islas* rotatable member such that the elements remained well-supported and the bow operable, without undue experimentation. *Id.*

9. Claim 11

Claim 11(Pre): “An archery bow having a brace condition and a drawn condition, the archery bow comprising:”

Supra, Section V.A.1(Pre).

Claim 11(a): “a riser; a first limb and second limb supported by the riser;”

Supra, Section V.A.1(a).

Claim 11(b)(i): “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,”

Supra, Section V.A.1(b)(i).

Claim 11(b)(ii): “the first rotatable member comprising a drawstring track, a cam track, a capstan and a terminal,”

Supra, Section V.A.1(b)(i)-(iv).

Claim 11(b)(iii): “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;”

Supra, Section V.A.1(b)(v).

Claim 11(c): “a drawstring extending between the first rotatable member and the second rotatable member;”

Supra, Section V.A.1(c).

Claim 11(d)(i): “a power cable attached to said terminal and extending toward the second limb,”

Supra, Section V.A.1(d)(i).

Claim 11(d)(ii): “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;”

Supra, Section V.A.1(d)(ii).

Claim 11(e): “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”

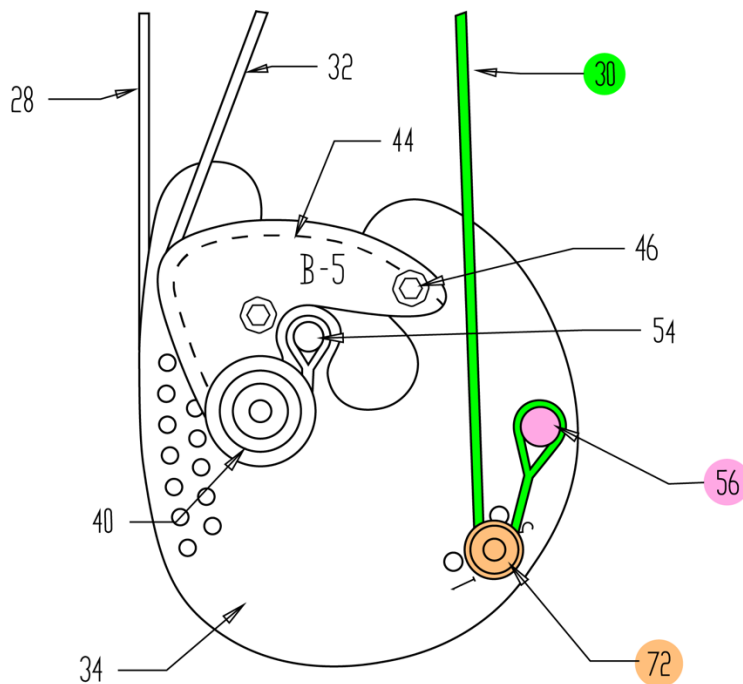
Supra, Section V.A.1(e).

Claim 11(f): “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”

Supra, Section V.A.1(f).

Claim 11(g): “wherein, in the drawn condition, the capstan is located closer to the elongate straight portion than the terminal.”

As presented in claim 1(f) above and incorporated herein by reference, *Darlington+Islas* renders obvious a pulley 22 (first rotatable member) having a capstan (intermediate post 72 - orange) and a terminal (anchor 56 - pink) configured as shown in the annotated figure below:



Supra, V.A.1(f), *Dec.*, 83. In the figure, the bow is in the brace condition, as evidenced by the vertical orientation of the bowstring 28.

According to *Darlington*, as the bowstring is drawn from the rest position toward the fully drawn position, “upper pulley 18 is rotated counterclockwise in FIGS. 1 and 2, and lower pulley 22 is rotated clockwise, around the respective axes

20, 24.” *Darlington*, 3:14-19, Figs. 1, 1A. By rotating lower pulley 22 of the *Darlington+Islas* bow in the clockwise direction to achieve the drawn condition shown in *Darlington’s* Fig. 1A, the relative distances from the intermediate post 72 and anchor 56 to the elongate straight portion of power cable 30 in the drawn condition are shown in modified Fig. 1A below:

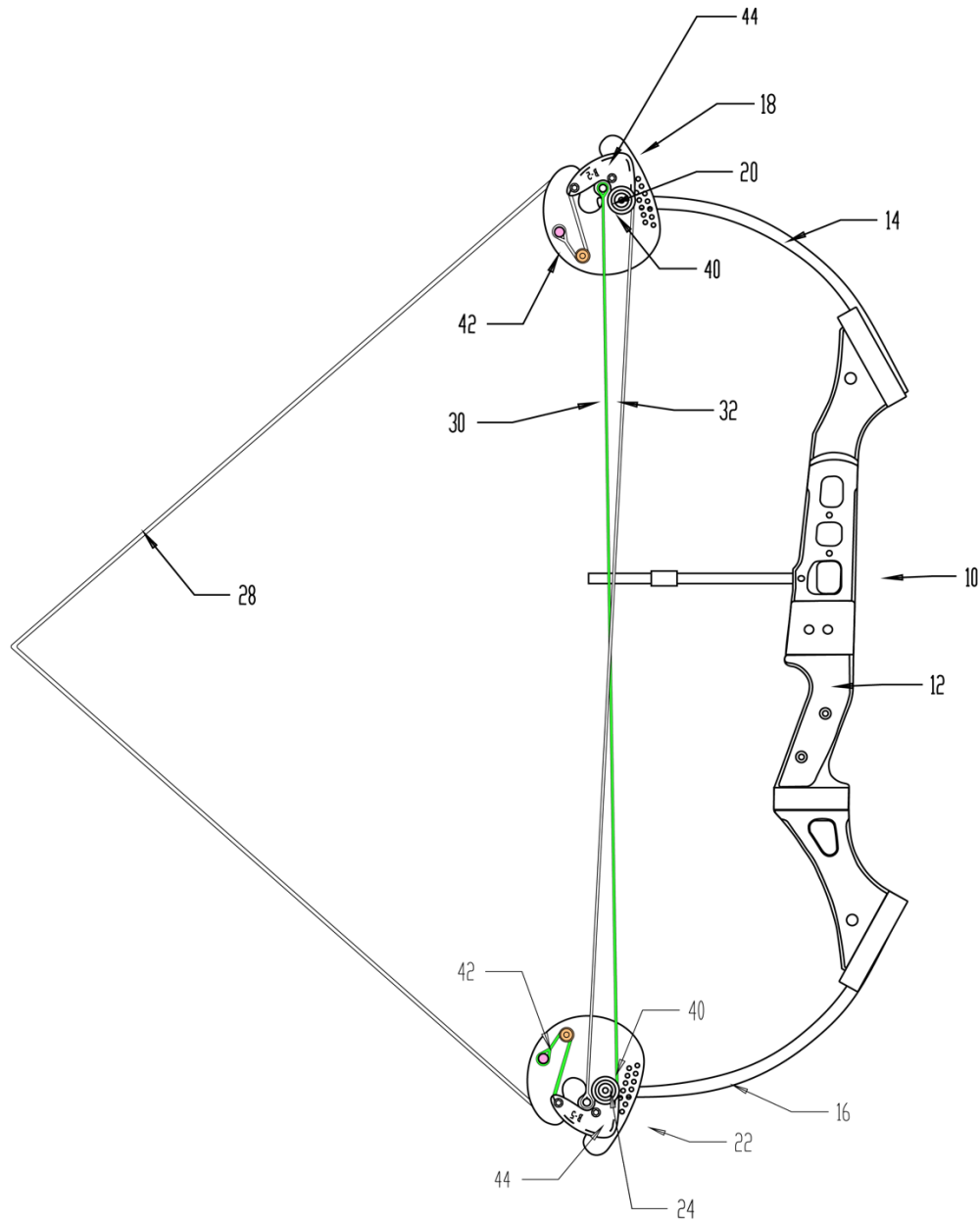


Fig. 1-A

Dec., 83. A PHOSITA would have recognized intermediate post 72 (capstan, orange) is located closer to the elongate straight portion of power cable 30 than the anchor 56 (terminal, pink) when the bow is in the drawn condition. *Id.* A close up of

the relative locations of the post, anchor, and power cable in the drawn condition of the *Darlington+Islas* bow is shown below:

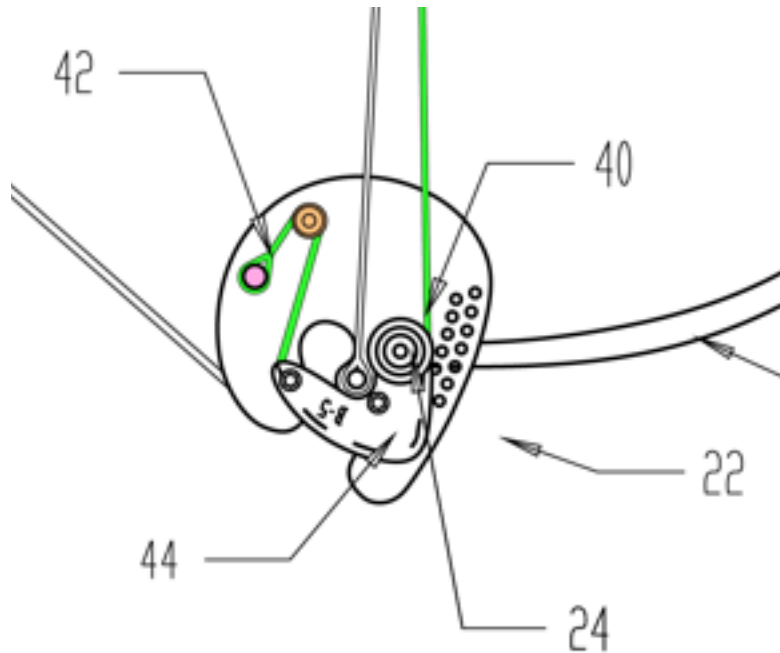


Fig.1-A

Dec., 83.

Furthermore, since the pulley rotates clockwise around the axle from the brace condition of the *Darlington+Islas* bow, a PHOSITA would have expected the elongate straight portion to remain closer to the capstan than the terminal after pulley 22 rotates clockwise into the drawn condition. *Dec.*, 83. Thus, *Darlington* as modified by *Islas* renders obvious the drawn condition in which the elongate straight portion is located closer to the capstan than the terminal, as claimed. *Id.*

10. Claim 12

Claim 12(Pre): “An archery bow having a brace condition and a drawn condition, the bow comprising:”

Supra, Section V.A.1(Pre).

Claim 12(a): “a riser; a first limb and second limb supported by the riser;”

Supra, Section V.A.1(a).

Claim 12(b)(i): “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,”

Supra, Section V.A.1(b)(i).

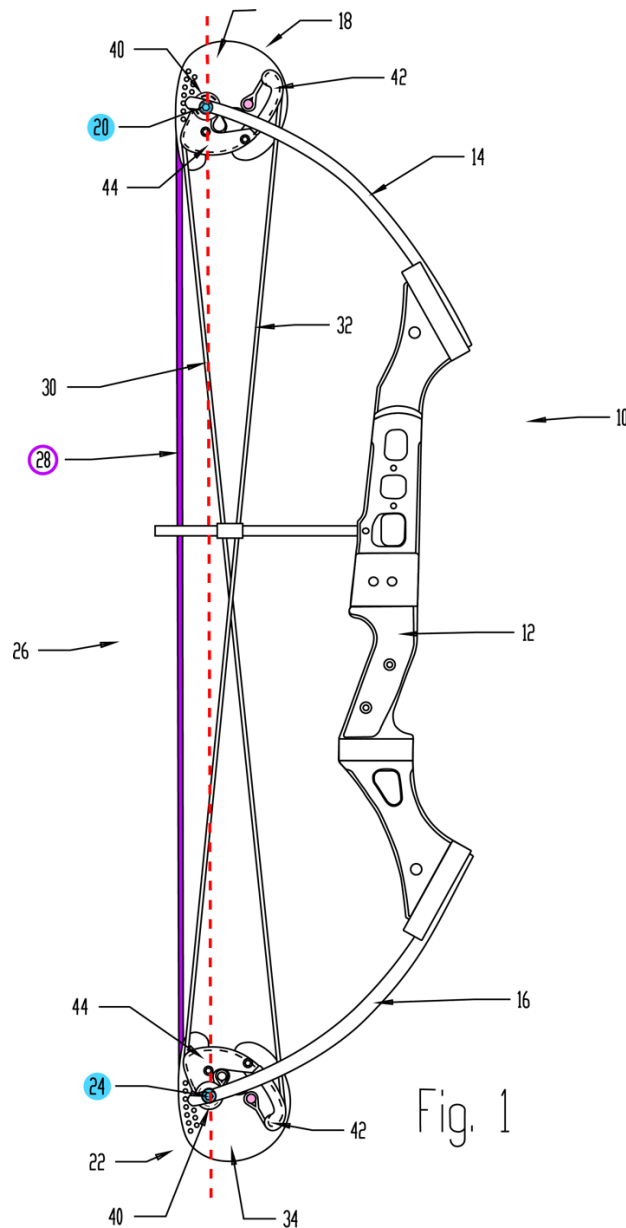
Claim 12(b)(ii): “the first axle and the second axle defining an axle plane,”

The '989 Patent discloses an “axle plane 46” that “divides the cam 10 into a first part 47 and a second part 48.” '989 *Patent*, Fig. 7; 4:52-55, *see also* 3:26-33. In the annotated Fig. 7 below, the dashed line indicating axle plane 46 is colored red:



'989 Patent, Fig. 7 (annotated).

Darlington teaches lower pulley 22 is “mounted on limb 16 for rotation around an axle 24” and an upper pulley 18 is “mounted on limb 14 for rotation around an axle 20[.]” *Darlington*, Fig. 1; 2:39-42, 1:42-47, Abstract; *Supra*, Section V.A.1(b)(i). Annotated Fig. 1 of *Darlington* below includes a red dashed line showing the location of an axle plane between axles 20 and 24:



Darlington, Fig. 1 (annotated). Thus, a PHOSITA would have recognized *Darlington* alone teaches or at least renders obvious a first axle and a second axle defining an axle plane, as claimed. *Dec.*, 87.

Claim 12(b)(iii): “the first rotatable member comprising a drawstring track, a cam track, a capstan and a terminal,”

Supra, Section V.A.1(b)(i)-(iv).

Claim 12(b)(iv): “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;”

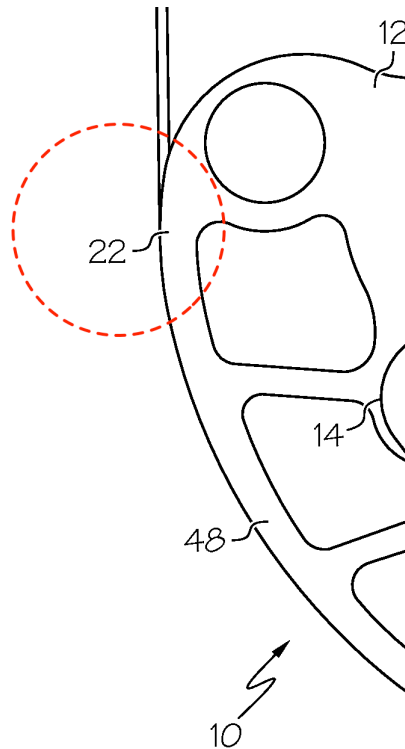
Supra, Section V.A.1(b)(v).

Claim 12(c)(i): “a drawstring extending between the first rotatable member and the second rotatable member,

Supra, Section V.A.1(c).

Claim 12(c)(ii): “the drawstring extending from the first rotatable member at an exit location;”

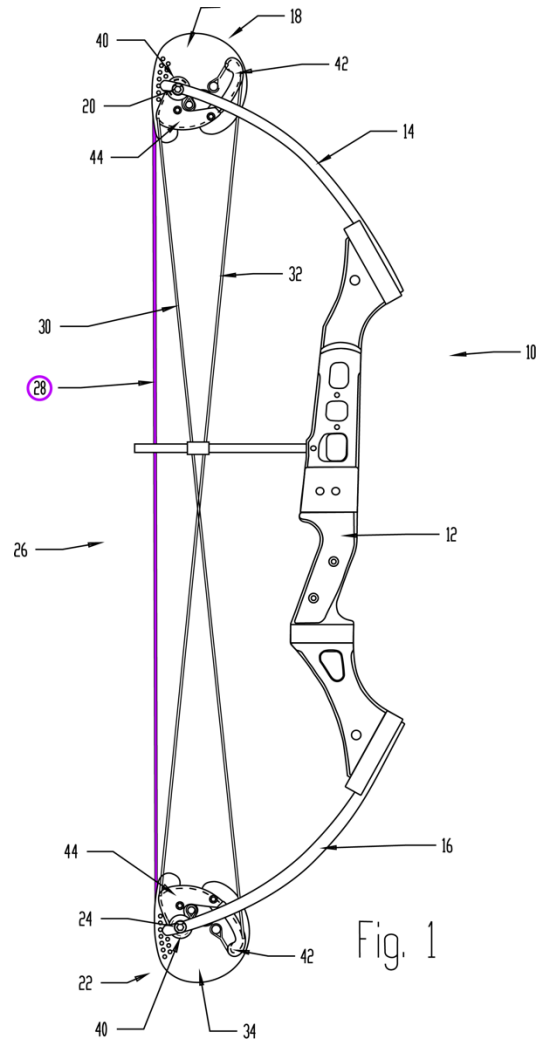
Embodiments of the '989 Patent describe a drawstring attached to the cam 10 and extending “to another rotatable member of the bow, such as a pulley or another cam, such as the second rotatable member 72 shown in FIG. 7.” '989 *Patent*, Fig. 7, 3:61-64. “The drawstring 20 leaves the cam 10 at an exit location 22.” *Id.*, 3:51-57, 4:52. A portion of Fig. 1 in the '989 Patent is annotated below to show exit location 22:



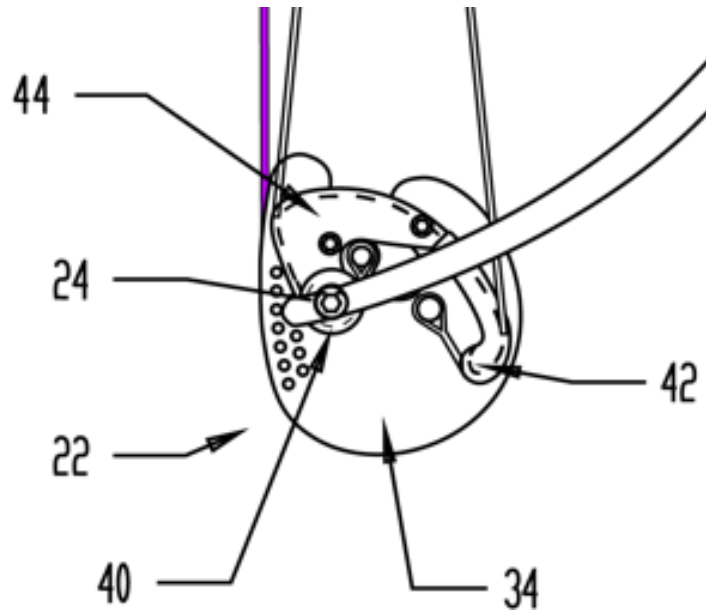
Id., Fig. 1 (excerpt, annotated).

Darlington's bowstring cable 28 extends “from a bowstring anchor on the first pulley around a bowstring let-out groove and then toward the second pulley.”

Darlington, Abstract, 1:45-50; Figs. 1-2. Annotated Fig. 1 below shows bowstring 28 (purple) exits lower pulley 22 and extends toward upper pulley 18:



Id., Fig. 1 (annotated), Abstract, 1:45-50, 2:47-49, 2:66-3:2.; *see also Supra* V.A.1(c). A close-up of the figure above shows bowstring 28 separating from the lower pulley 22 (mapped first rotatable member) and extending towards the upper pulley 18 at an exit location:



Darlington, Fig. 1 (excerpt, annotated). Thus, *Darlington* alone teaches or at least renders obvious a drawstring extending from the first rotatable member at an exit location, as claimed. *Dec.*, 91.

Claim 12(d)(i): “a power cable attached to said terminal and extending toward the second limb,”

Supra, Section V.A.1(d)(i).

Claim 12(d)(ii): “said power cable comprising a capstan portion in contact with said capstan and a terminal portion in contact with said terminal;”

Supra, Section V.A.1(d)(ii).

Claim 12(e)(i): “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”

As discussed above regarding limitation 12(b)(ii), Fig. 7 of the '989 Patent illustrates an axle plane. *Supra*, V.A.10(b)(ii). Fig. 1 further illustrates an axle plane dividing the lower rotatable member into a first part 47 and a second part 48:

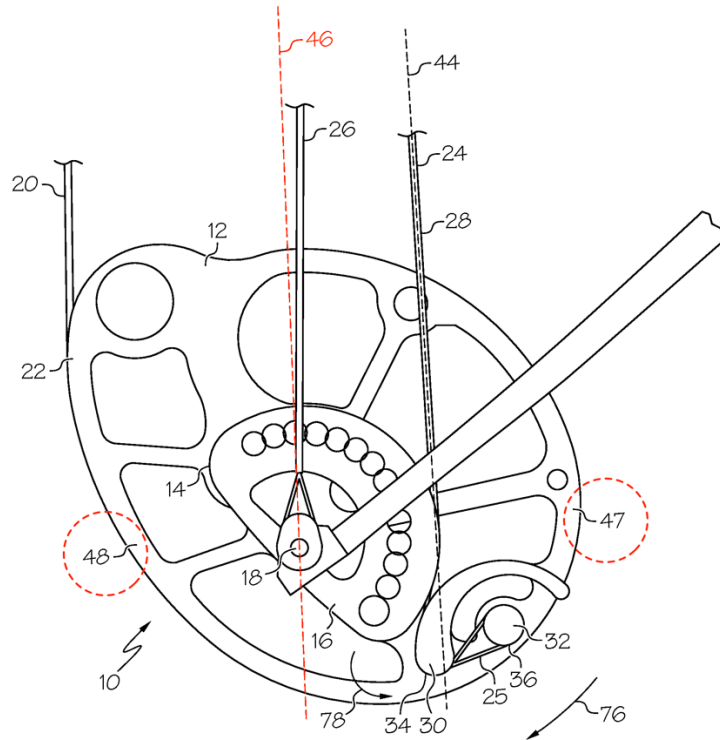
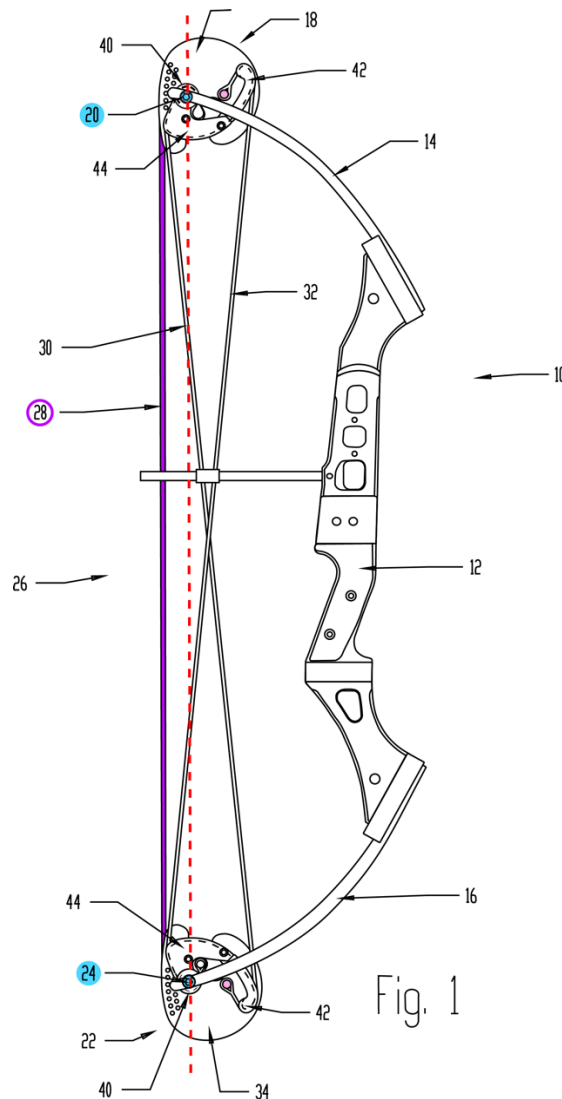


FIG. 1

'989 Patent, Fig. 1 (annotated), 4:52-57.

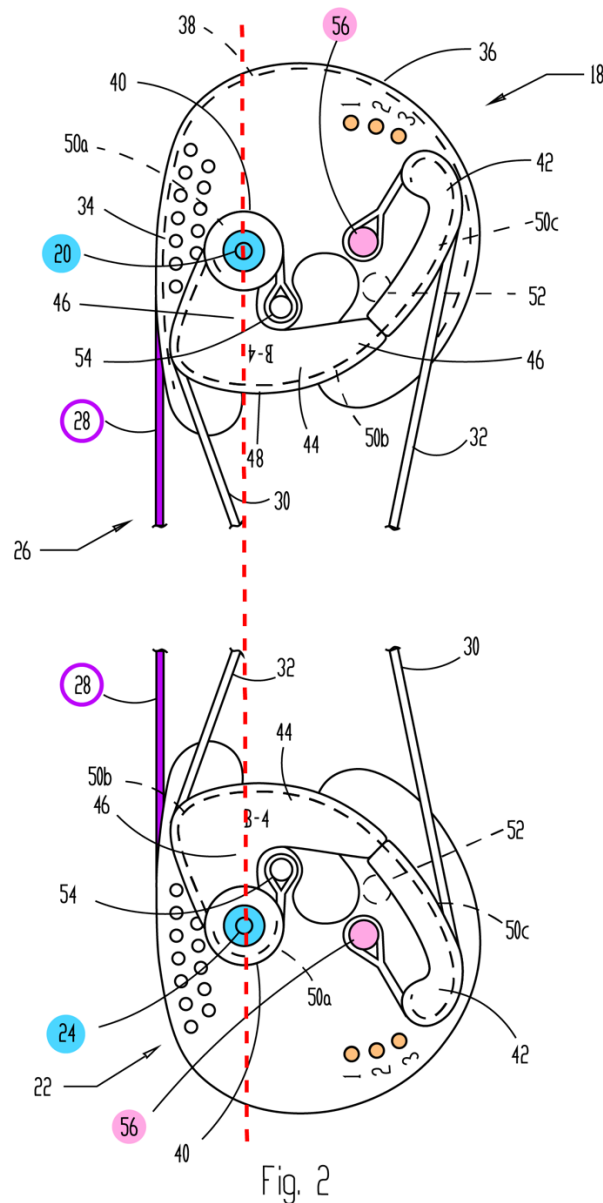
As discussed, *Darlington's* bow includes an axle plane:



Darlington, Fig. 1; *Supra*, V.A.10(b)(ii). The red dashed line (mapped axle plane) creates a boundary between two parts of *Darlington*'s rotatable members, as claimed.

Darlington alone teaches or at least renders obvious the capstan and the terminal located in the first part, the drawstring exit location located in the second part. In *Darlington*'s annotated Fig. 1 above, the terminal (annotated pink) is on the right side (mapped "first part") of the axle of pulley 22, and bowstring 28 (annotated

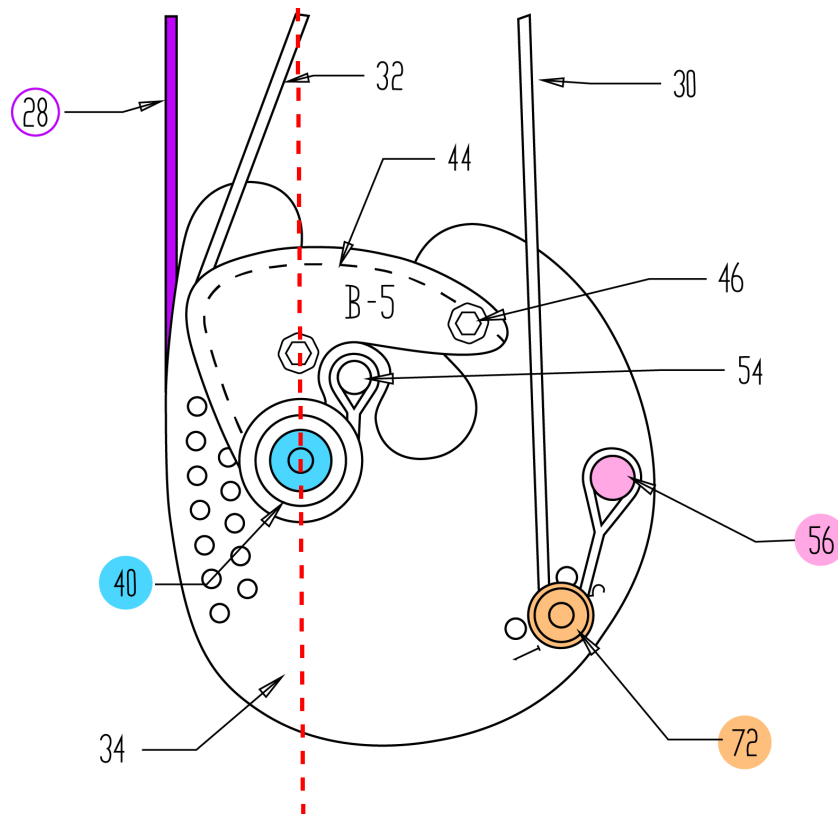
purple) enters/exits pulleys 18, 22 on the left side (mapped “second part”) of the axle. *Dec.*, 94. Furthermore, *Darlington*’s pulleys include the holes labeled “1,” “2,” and “3” that allow intermediate post 72 (mapped capstan) to be “adjustably positionable on base 34.” *Darlington*, 4:1-4. Each of holes 1,2,3 are located on the same side of the axle plane as the terminal:



Darlington, Fig. 2 (annotated); *Dec.*, 94.

Since all positioning holes are located on the same side of the axle as anchor 56, intermediate post 72 (mapped capstan) is also located on the anchor-side of the axle. *Dec.*, 94. Thus, *Darlington* alone teaches that the capstan and terminal are located in the first part of the pulley, as defined by the axle plane, and the drawstring exit location is located in the second part. *Id.*

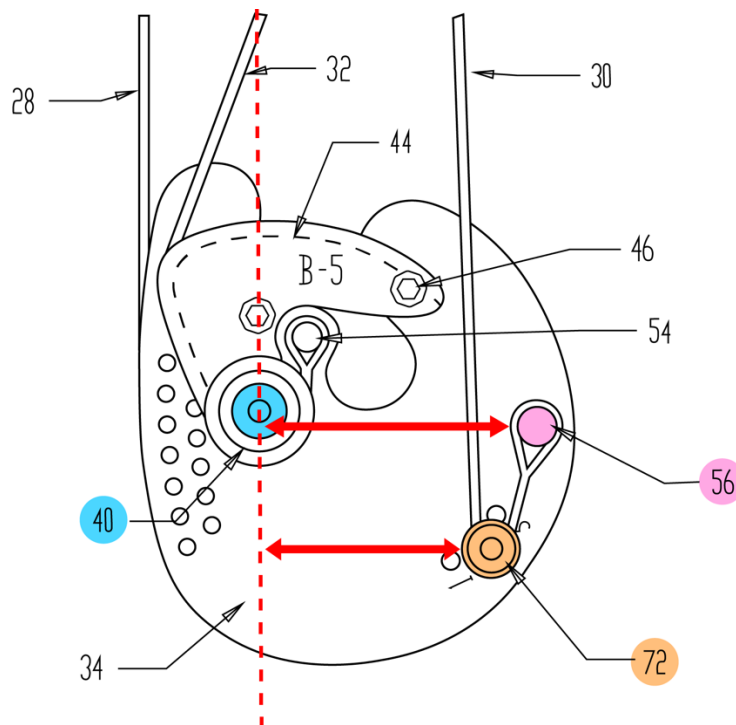
Furthermore, the proposed *Darlington+Islas* bow of claim 1(f) modifies *Darlington's* bow such that power cable 30 wraps counterclockwise around post 72 before attaching to anchor 56, placed near the pulley's periphery. In embodiments, the resulting pulley would have been configured as in the illustration below:



Dec., 94. A PHOSITA would have recognized the capstan and terminal of the *Darlington+Islas* bow are on the opposite side of the axle plane from the drawstring exit location. *Id.* Thus, *Darlington* both alone and as modified by *Islas* renders obvious claim limitation 12(e)(i). A motivation to combine *Darlington* and *Islas* is provided above regarding limitation 1(f), and is incorporated herein by reference.

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

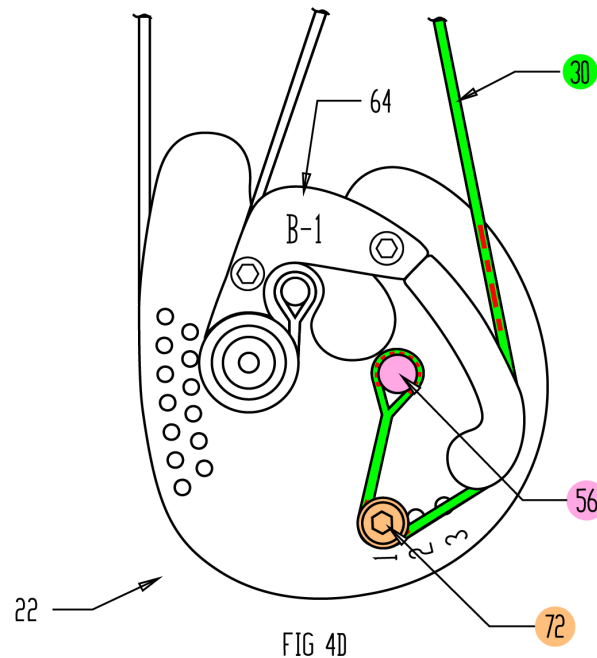
Darlington’s bow, as modified by *Islas* in claim 1(f), renders obvious the axle plane being further from the terminal than the capstan. *Supra*, V.A.1(f). Specifically, the *Darlington+Islas* bow shown in the annotated figure below illustrates the axle plane is further from the terminal than the the capstan:



Thus, *Darlington* as modified by *Islas* renders claim 12(e)(ii) obvious. *Dec.*, 95. A motivation to combine *Darlington* and *Islas* is provided above regarding limitation 1(f), and is incorporated herein by reference.

Claim 12(f)(i): “wherein, in the brace condition, said power cable comprises an elongate straight portion located near said first rotatable member,”

As discussed above in claim 1(d)(ii), a portion of power cable 30 located near *Darlington*’s pulley 22 (mapped first rotatable member) includes an elongate straight portion, annotated with the red dash-dotted line at the far right of Fig. 4D below:



Supra, V.A.1(d)(ii); *Darlington*, Fig. 4D (annotated), 3:65-4:6, *see also* 1:55-2:2, 3:20-37, Figs. 4A-C, 5A-C; *Dec.*, 96. *Darlington* specifically identifies the bows of Figs. 1 and 2 as in the “undrawn condition” or the “rest position.” *Darlington*, 2:66-3:19; Figs. 1-2.

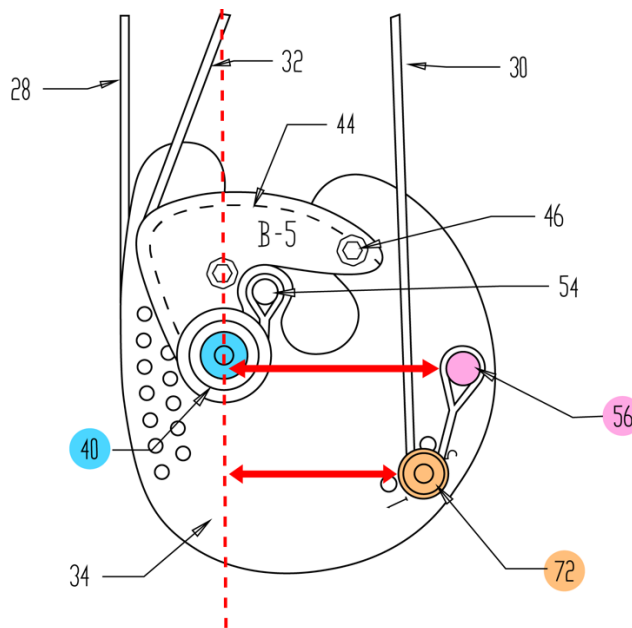
Claim 12(f)(ii): “the elongate straight portion defines a cable portion plane, said first axle and said terminal are located on opposite sides of said cable portion plane.

Supra, Section V.A.1(g).

11. 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 proposed *Darlington+Islas* bow presented in claim 12 shows that the horizontal distance separating the vertical axle plane and the terminal is greater than the horizontal distance separating vertical axle plane and the capstan. *Supra*, V.A.12(e)(ii).



A PHOSITA would have recognized the horizontal distances from the terminal to the axle plane and from the capstan to the axle plane, respectively annotated by the

upper and lower red arrows above, are each orthogonal (perpendicular) to the vertical axle plane. *Dec.*, 98. Thus, *Darlington* as modified by *Islas* renders claim 13 obvious.

12. Claim 14

Claim 14: “The archery bow of claim 12, wherein a distance between the first axle and the terminal is greater than a distance between the first axle and the cam track.”

Supra, Section V.A.3.

13. Claim 15

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

Supra, Section V.A.2.

14. Claim 16

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.”

As discussed above in claim 4, *Darlington* alone teaches a bow with a removable draw length module 44 (the mapped cam track) attached to flat base 34 of each of the upper and lower pulleys 18, 22. *Darlington*, 2:50-57; Figs. 1-2; *Supra*, Section V.A.4.

15. Claim 17

Claim 17 (a): “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,”

Supra, Section V.A.6(a).

Claim 17(b): “the second power cable attached to said second terminal and extending toward the first limb,”

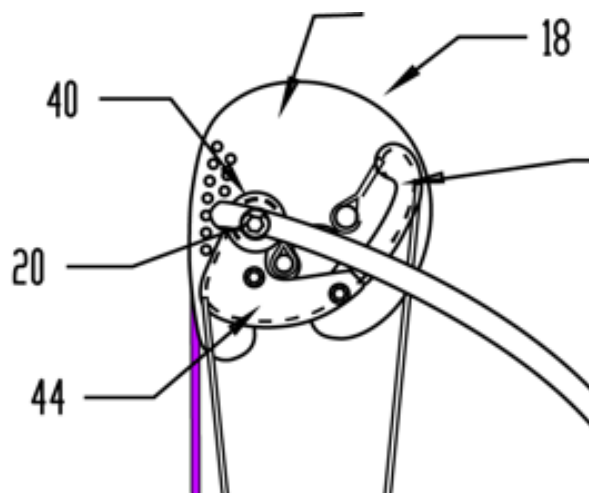
Supra, Section V.A.6(b).

Claim 17(c)(i): “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,”

Supra, Section V.A.6(c).

Claim 17(c)(ii): “the drawstring extending from the second rotatable member at a second exit location;”

As discussed regarding limitation 12(c)(ii) above, *Darlington* teaches bowstring 28 separates from pulley 22 at a drawstring exit location. *Supra*, Section V.A.10(c)(ii). *Darlington*’s Fig. 1 shows bowstring 28 similarly separates from upper pulley 18 (mapped second rotatable member) and extends towards lower pulley 22 at a second exit location:



Darlington, Fig. 1 (annotated). Thus, *Darlington* teaches or at least renders obvious the drawstring extending from the second rotatable member at a second exit location, as claimed. *Dec.*, 103.

Claim 17(d): “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.”

For the reasons discussed above regarding the first rotatable member, the second rotatable member and corresponding associated components of the *Darlington+Islas* bow renders obvious this limitation. *Supra*, Section V.A.12(e)(i)-(ii).

16. Claim 18

Claim 18: “The archery bow of claim 17, wherein said second rotatable member comprises a mirror image of said first rotatable member.”

Supra, Section V.A.7.

17. Claim 19

Claim 19(Pre): “An archery bow having a brace condition and a drawn condition, the bow comprising:”

Supra, Section V.A.1(Pre).

Claim 19(a): “a riser; a first limb and second limb supported by the riser;”

Supra, Section V.A.1(a).

Claim 19(b)(i): “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,”

Supra, Section V.A.1(b)(i).

Claim 19(b)(ii): “the first axle and the second axle defining an axle plane,”

Supra, Section V.A.10(b)(ii).

Claim 19(b)(iii): “the first rotatable member comprising a drawstring track, a cam track, a capstan and a terminal,”

Supra, Section V.A.1(b)(iii)-(iv).

Claim 19(b)(iv): “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;”

Supra, Section V.A.1(b)(v).

Claim 19(c): “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;”

Supra, Section V.A.10(c)(i)-(ii).

Claim 19(d): “a power cable attached to said terminal and extending toward the second limb, said power cable comprising a capstan portion in contact with said capstan and a terminal portion in contact with said terminal;”

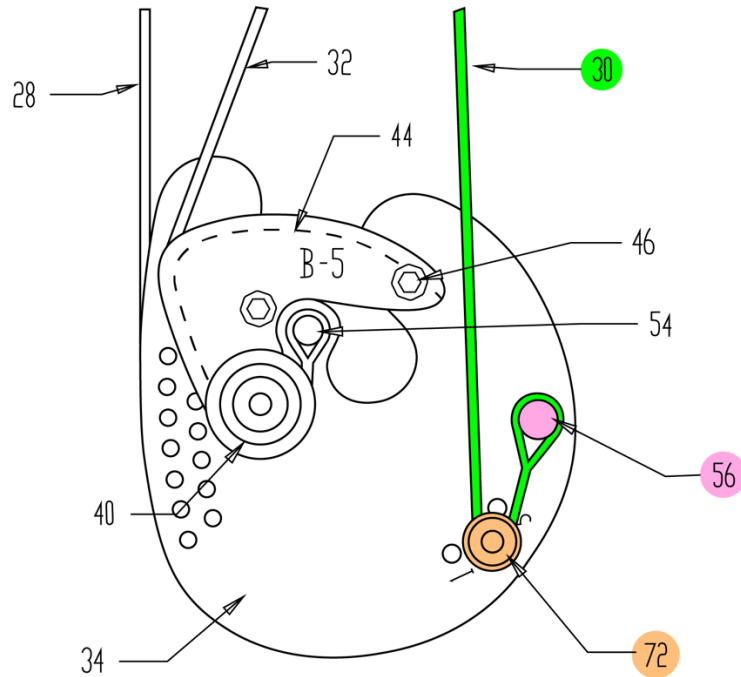
Supra, Section V.A.10(d)(i)-(ii).

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

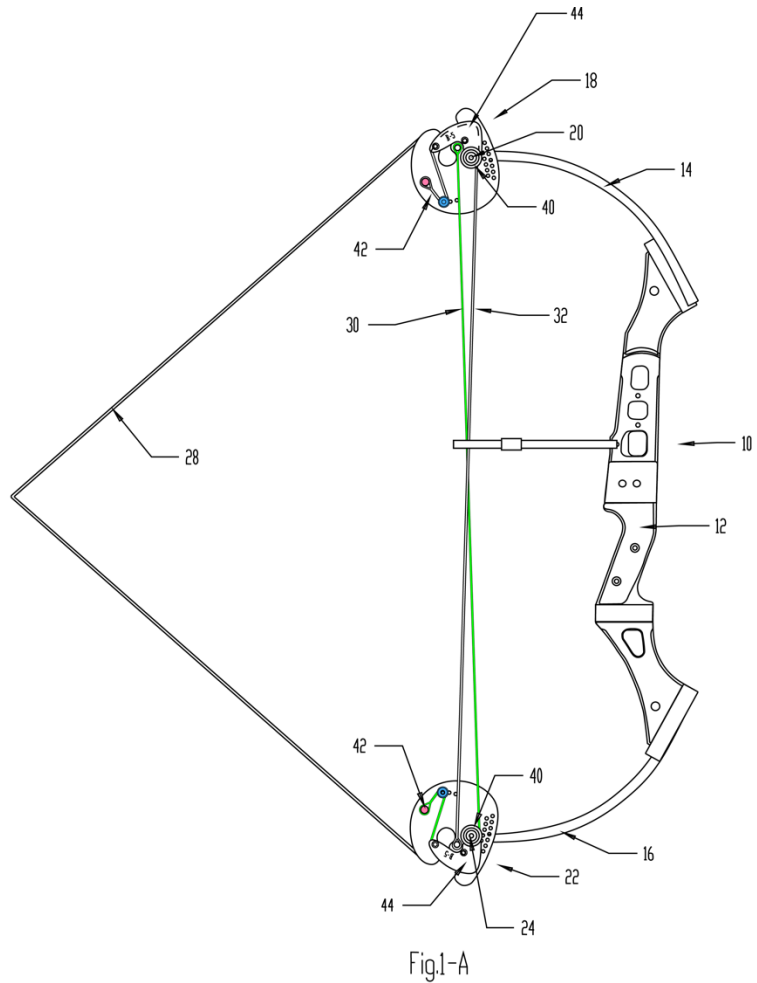
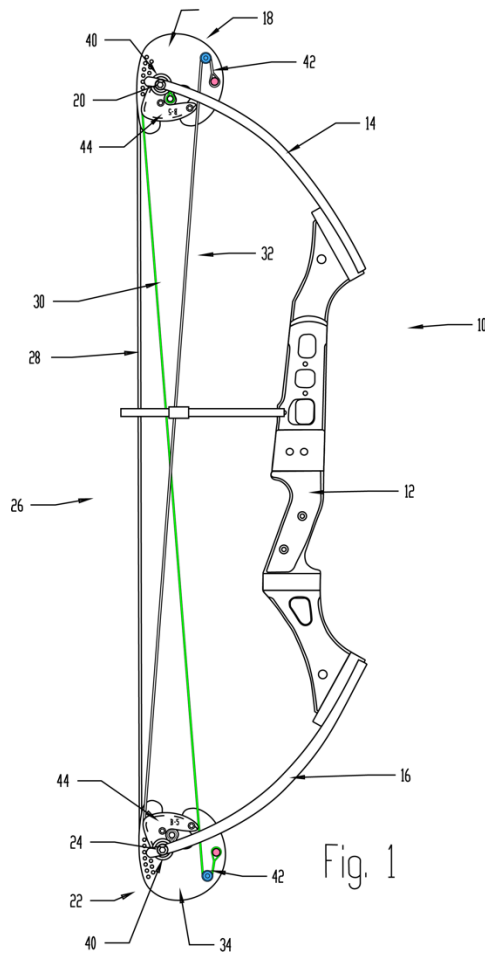
Supra, Section V.A.10(e)(i)-(ii).

Claim 19(f)(i): “wherein, in the drawn condition, said power cable comprises an elongate straight portion located near said first rotatable member,”

As discussed in claim 1(d)(ii), the *Darlington+Islas* bow teaches and renders obvious an elongate straight portion of the power cable near lower pulley 22 in the brace condition, shown in the annotated figure below:



Supra, V.A.1(f). Further, the *Darlington+Islas* bow teaches such an elongate straight portion near the first (lower) rotatable member in the *drawn condition*, as illustrated in annotated figure 1A below:



Dec., 115. Power cable 30 (green) includes a straight portion near lower pulley 22 (first rotatable member) that extends towards upper pulley 18 (second rotatable member) in **both** the brace and drawn conditions. *Id.* A motivation to combine *Darlington* and *Islas* is provided above regarding limitation 1(f), and is incorporated herein by reference.

Claim 19(f)(ii): “[wherein, in the drawn condition,] the capstan [is] located closer to the elongate straight portion than the terminal.”

Supra, Section V.A.11(g).

VI. THE *FINTIV* FACTORS FAVOR INSTITUTION

Under the “*Fintiv* factors,” the Board may consider parallel litigation, including an early trial date, in determining whether to institute under 35 U.S.C. § 314(a). *NHK Spring Co., Ltd., v. Intri-Plex Technologies, Inc.*, IPR2018-00752, Paper 8 at 19–20 (PTAB Sept. 12, 2018) (precedential); *Apple Inc. v. Fintiv, Inc.*, IPR2020-00019, Paper 11 at 2–3, 6 (PTAB Mar. 20, 2020) (precedential). Those factors favor institution here.

A. Stay

Parallel litigation is ongoing. While no stay has been requested, Petitioner intends to seek a stay, thus favoring institution. At worst, this factor is neutral because the Board “will not attempt to predict” how the district court will proceed. *Sand Revolution II, LLC v. Continental Intermodal Group-Trucking LLC*, IPR2019-01393, Paper 24 at 7 (PTAB Jun. 16, 2020).

B. Proximity of the Court’s Trial Date

“This factor looks at the *proximity* of the trial date to the date of [FWD] to assess the weight to be accorded a trial date set earlier than the expected [FWD] date.” *Shenzhen Carku Tech. Co., Ltd. v. The Noco Co.*, IPR2020-00944, Paper 20 at 61 (PTAB Nov. 12, 2020). The District Court entered its scheduling order setting **February 24, 2025** as the trial date. Ex. 1013 (Preliminary Pretrial Conference Order), 9. If the District Court keeps this trial schedule the Board’s FWD in this

proceeding will be due in October 2025. This factor therefore weighs against institution.

C. Investment in Parallel Proceeding

The parties have invested little in the parallel proceeding. MCP has served initial infringement contentions on the '989 Patent and Ravin has served invalidity contentions covering the same. No depositions have taken place, and Markman will not proceed until after the close of discovery. *Id.*, 3, 5, 6 (including the *Markman* process with summary judgment). Dispositive motions are not due until July 19, 2024. *Id.*, 6. This factor weighs in favor of institution.

D. Overlap

Petitioner stipulates that if the Board institutes IPR, Petitioner will not seek resolution in the District Court of any ground of invalidity raised in the Petition or that could have been raised in the Petition. *Sotera Wireless v. Masimo*, IPR2020-01019, Paper 12 at 18-19 (Dec. 1, 2020) (precedential). This stipulation “mitigates concerns of potentially conflicting decisions and duplicative efforts between the district court and the PTAB,” and the Director has instructed that the Board will not discretionarily deny institution under 35 U.S.C. § 314(a). *Interim Procedure for Discretionary Denials*, pp. 7-8 (June 21, 2022). Accordingly, this factor weighs heavily in favor of institution.

E. Same Party

The Parties are the same. However, members of the Board have noted *Fintiv* addresses only the scenario where the petitioner is unrelated to the defendant in litigation, which weighs against denying institution, but *Fintiv* “says nothing about situations in which the petitioner is the same as, or is related to, the district court defendant.” *Cisco Sys., Inc. v. Ramot at Tel Aviv Univ. Ltd.*, IPR2020-00122, Paper 15 at 10-11 (PTAB May 15, 2020) (APJ Crumbley, dissenting) (disfavoring a “defendant in the district court” is “contrary to the goal of providing district court litigants an alternative venue to resolve questions of patentability”).

F. Other Circumstances

“[W]here the PTAB determines that the information presented at the institution stage presents a compelling unpatentability challenge, **that determination alone** demonstrates that the PTAB should not discretionarily deny institution under *Fintiv*.” *Hewlett Packard Enterprise Co., et al. v. Billjco LLC*, IPR2022-00420, Paper 17, at 6 (PTAB July 12, 2022) (emphasis added) (“[c]ompelling, meritorious challenges are those in which the evidence, if unrebutted in trial, would plainly lead to a conclusion that one or more claims are unpatentable by a preponderance of the evidence”). The strength of Petitioner’s Proposed Grounds weighs strongly in favor of institution. *Id.* (refusing to deny institution under *Fintiv* based solely on the strength of Petitioner’s grounds).

VII. CONCLUSION

For the forgoing reasons, Petitioner respectfully requests *inter partes* review of the Challenged Claims.

Respectfully submitted,

ERISE IP, P.A.

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COUNSEL FOR PETITIONER

VIII. MANDATORY NOTICES UNDER 37 C.F.R. § 42.8

A. Real Parties-in-Interest Under 37 C.F.R. § 42.8(b)(1)

Petitioner Ravin is the real party-in-interest.

B. Related Matters Under 37 C.F.R. § 42.8(b)(2)

The '989 Patent is presently the subject of a patent infringement lawsuit filed against Petitioner in the United States District Court for the Western District of Wisconsin, *MCP IP, LLC v. Ravin Crossbows, LLC*, Case No. 3:23-cv-00142-JDP (WDWI).

C. Lead and Back-Up Counsel Under 37 C.F.R. § 42.8(b)(3)

Petitioner provides the following designation and service information for lead and back-up counsel. 37 C.F.R. § 42.8(b)(3) and (b)(4).

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APPENDIX OF EXHIBITS

Exhibit 1001	U.S. Patent No. 8,683,989 B1 to McPherson (“ <i>McPherson</i> ”)
Exhibit 1002	File History of U.S. Patent No. 8,683,989 (“ <i>’989 File History</i> ”)
Exhibit 1003	Declaration of Joshua Lange, P.E. (“ <i>Decl.</i> ”)
Exhibit 1004	U.S. Patent No. 8,205,607 B1 to Darlington (“ <i>Darlington</i> ”)
Exhibit 1005	U.S. Patent Application Publication No. 2008/0135032 A1 to Islas (“ <i>Islas</i> ”)
Exhibit 1006	U.S. Patent No. 6,470,870 B1 to Schaar (“ <i>Schaar</i> ”)
Exhibit 1007	Browning Compound Bow User Guide (“ <i>Browning Manual</i> ”)
Exhibit 1008	Bear Archery Owner’s Manual (“ <i>Bear Manual</i> ”)
Exhibit 1009	U.S. Patent Application Publication No. 2010/0154769 A1 to Grace, Jr. (“ <i>Grace</i> ”)
Exhibit 1010	U.S. Patent No. 7,997,259 B2 to Wilson (“ <i>Wilson</i> ”)
Exhibit 1011	U.S. Patent Application Publication No. 2009/0288650 A1 to Batdorf (“ <i>Batdorf</i> ”)
Exhibit 1012	Diamond Archery Nuclear Ice Instructions (“ <i>Diamond Manual</i> ”)
Exhibit 1013	Preliminary Pretrial Conference Order, 23-cv-142-jdp, (“ <i>Preliminary Pretrial Conference Order</i> ”)

CERTIFICATION OF WORD COUNT

The undersigned certifies pursuant to 37 C.F.R. §42.24 that the foregoing Petition for *Inter Partes* Review, excluding any table of contents, mandatory notices under 37 C.F.R. §42.8, certificates of service or word count, or appendix of exhibits, contains 12,981 words according to the word-processing program used to prepare this document (Microsoft Word).

Dated: March 1, 2024

Respectfully submitted,

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CERTIFICATE OF SERVICE ON PATENT OWNER
UNDER 37 C.F.R. § 42.105(a)

Pursuant to 37 C.F.R. §§ 42.6(e) and 42.105(b), the undersigned certifies that on March 1, 2024, a complete and entire copy of this Petition for *Inter Partes* Review and Exhibits were provided via Priority Mail Express to the Patent Owner by serving the correspondence address of record for the '989 patent:

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