

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

BOWMAR ARCHERY LLC
Petitioner,

v.

VETERAN'S INNOVATIVE PRODUCTS, LLC
Patent Owner.

Patent No. 8,043,177
Filing Date: July 7, 2008
Issue Date: October 25, 2011
Title: ARROWHEAD HAVING COLLAPSIBLE AND OUTWARDLY BIASED
BLADES

Inter Partes Review No.: IPR2024-00401

**PETITION FOR *INTER PARTES* REVIEW
UNDER 35 U.S.C. §§ 311-319 AND 37 C.F.R. § 42.100 *et seq.***

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4.	“a second blade member having a first end pivotally interconnected with the ferrule body and an opposite second end,”	76
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EXHIBIT LIST

Exhibit	Description
1001	U.S. Patent No. 8,043,177
1002	U.S. Patent No. 3,168,313
1003	U.S. Patent No. 8,016,704
1004	U.S. Provisional Application No. 61/038,286
1005	U.S. Patent No. 2,806,317
1006	U.S. Patent No. 2,212,345
1007	U.S. Patent No. 6,918,848
1008	U.S. Patent No. 7,771,297
1009	Prosecution File History for U.S. Patent No. 8,043,177
1010	U.S. Patent No. 4,210,330
1011	U.S. Patent No. 6,270,435
1012	U.S. Patent No. 6,287,224
1013	U.S. Patent No 3,600,835
1014	Ancient Arrowheads, depicted at https://www.wweek.com/news/schools/2022/12/29/oregon-state-university-archeologists-found-north-americas-oldest-stone-points-in-idaho/
1015	U.S. Patent No. 3,036,395
1016	U.S. Patent No. 4,166,619
1017	U.S. Patent No. 3,036,396
1018	U.S. Patent No. 6,830,523
1019	Declaration of Todd A. Kuhn, Ph.D.
1020	U.S. Patent No. 4,932,671

I. INTRODUCTION

Bowmar Archery LLC (“Petitioner”) petitions for *inter partes* review (“IPR”) under 35 U.S.C. §§ 311–319 and 37 C.F.R. § 42 of claims 1-4, 7, 9, 11, 12, 15, and 17 of U.S. Patent No. 8,043,177 (“the ‘177 patent,” Ex. 1001), owned by Veteran’s Innovative Products, LLC.

The ‘177 patent is directed toward an arrowhead having blade members pivotally interconnected to a ferrule body, and a biasing member, or spring, that biases the blade members toward an extended position. The claimed subject matter of ‘177 patent was well known before its filing date. In fact, every limitation in the challenged claims are contained in the prior art.

As shown below, claims 1-4, 7, 9, 11, 12, 15, and 17 are anticipated and/or would have been obvious over the prior art because they recite nothing more than known components of prior art broadheads. (Ex. 1019, ¶¶35-36, 62-63).

II. MANDATORY NOTICES PURSUANT TO 37 C.F.R. § 42.8(A)(1)

A. Real Parties in Interest & Related Matters

Petitioner is the real party-in-interest for this petition. There are no related litigations.

B. Lead & Back-Up Counsel, and Service Information

Petitioner designates counsel listed below and consent to electronic service at the email listed below. A power of attorney for counsel is being filed with this

Petition.

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**III. COMPLIANCE WITH THE REQUIREMENTS FOR A PETITION
FOR *INTER PARTES* REVIEW**

A. Payment of Fees Pursuant to 37 C.F.R. § 42.103

Fees are submitted herewith. If any additional fees are due at any time during the IPR proceedings, the undersigned authorizes the Office to charge such fees to Deposit Account No. 19-0733.

B. Grounds for Standing Pursuant to 37 C.F.R. § 42.104(a)

Petitioners hereby certify that the ‘177 patent is available for IPR and that Petitioner is not barred or estopped from requesting an IPR challenging claims 1-4, 7, 9, 11, 12, 15, and 17 on the grounds identified in this Petition.

IV. IDENTIFICATION OF CHALLENGE AND RELIEF REQUESTED

Petitioner requests cancellation of claims 1-4, 7, 9, 11, 12, 15, and 17. The table below identifies the references, applicable claims, and the ground for unpatentability.

	Reference(s)	Claims	Basis
Ground 1	U.S. Patent No. 3,168,313 (“Lint”) (Ex. 1002)	1-4, 7, 9, 11, 12, 15, and 17	35 U.S.C. § 102
Ground 2	U.S. Patent No. 8,016,704 (“Vandewater”) (Ex. 1003)	11, 12, 15, and 17	35 U.S.C. § 102
Ground 3	Lint alone or in further view of U.S. Patent No. 2,806,317 (“Minisini”) (Ex. 1005) and U.S. Patent No. 2,212,345 (“Krieger”) (Ex. 1006)	1-4, 7, 9, 11, 12, 15, and 17	35 U.S.C. § 103
Ground 4	U.S. Patent No. 3,600,835 (“Hendricks”) (Ex. 1013) alone or in further view of the knowledge of a person having ordinary skill in the art	11, 12, 15, and 17	35 U.S.C. § 103
Ground 5	U.S. Patent No. 6,287,224 (“Liechty, II”) (Ex. 1012)	1-4, 9, 11, 12, and 17	35 U.S.C. § 102

Lint, Vandewater, Krieger, Minisini, and Hendricks were not cited during prosecution of the ‘177 patent. Liechty, II is on the face of the ‘177 patent, but it was not substantively addressed by the Examiner during prosecution of the ‘177 patent. Thus, none of the proposed grounds were considered during prosecution of the ‘177 patent. An IPR should be instituted on claims 1-4, 7, 9, 11, 12, 15, and 17 and grounds because “there is a reasonable likelihood that the petitioner [will] prevail

with respect to at least 1 of the claims challenged in the petition,” as set forth below.
35 U.S.C. § 314(a).

Further, to Petitioner’s knowledge there are no grounds for discretionary denial under § 314(a) because there are no prior petitions challenging the validity of the ’177 patent, this is not a successive petition, there is no litigation in which the ’177 patent is asserted and no reason why the Patent Trial and Appeal Board (“Board”) could not complete this review within a year of institution.

Discretionary denial under § 325(d) is not warranted here. As noted above, Petitioner has not been involved in any previous review of the ’177 patent. Further, the same or similar arguments forming the grounds for this Petition have not been previously considered by the Office and the references and combination of references are not redundant to any combination of references considered during prosecution. Particularly, Lint, Vandewater, Krieger, Minisini, and Hendricks were not identified during prosecution of the ’177 patent. And Liechty, II was not substantively addressed by the Examiner during prosecution of the ’177 patent. As such, Grounds I-V were not substantively considered during prosecution and accordingly, the Board should not decline institution under 35 U.S.C. § 325(d) and an IPR should be instituted on all claims and grounds as this Petition establishes a likelihood that Petitioner will prove unpatentable at least one of the petitioned claims.

A. Level of Ordinary Skill in the Art

The ‘177 patent is directed to arrowheads or broadheads. (Ex. 1001, 8:8-12). A person of ordinary skill in the art in the 2008 timeframe would have either: (1) a bachelor’s degree in the field of mechanical engineering and/or related field, and at least two years of work experience in the development of broadheads; or (2) any education and experience equivalent to (1). (Ex. 1019, ¶22).

B. The ‘177 Patent

The ‘177 patent is entitled “Arrowhead Having Collapsible and Outwardly Biased Blades.” It describes an arrowhead, such as a broadhead, with a cylindrical body or ferrule 12. (Ex. 1001, 2:52-55). The rearward end of the ferrule 12 attaches to an arrow and the forward end of the ferrule 12 has a pointed tip 14. (*Id.*, 2:55-58). The arrowhead 10 includes blade members 20 pivotably connected to the ferrule 12 for movement of the blades between a retracted position and an extended position. (*Id.*, 2:59-62). At least one biasing member 40, such as a spring, biases the blade members toward the extended position. (*Id.*, 3:35-44).

Figures 1 and 2 in the ‘177 patent show the blades biased by two springs. Annotated versions of Figures 1 and 2, taken from the Declaration of Dr. Kuhn¹, are shown below.

¹ (Ex. 1019, ¶34).

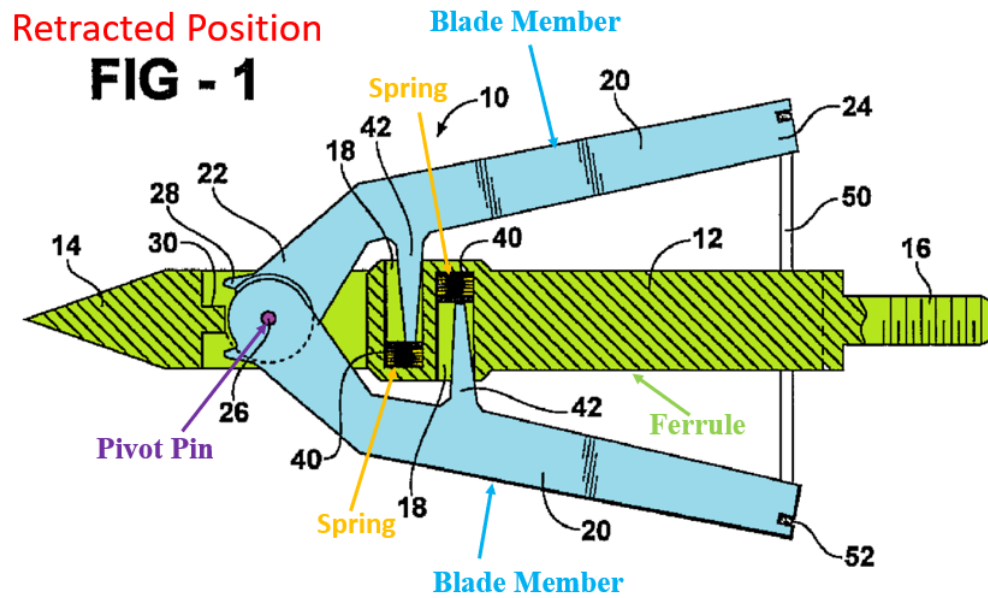


Figure 1 - Showing Embodiment with Blades in Retracted Position

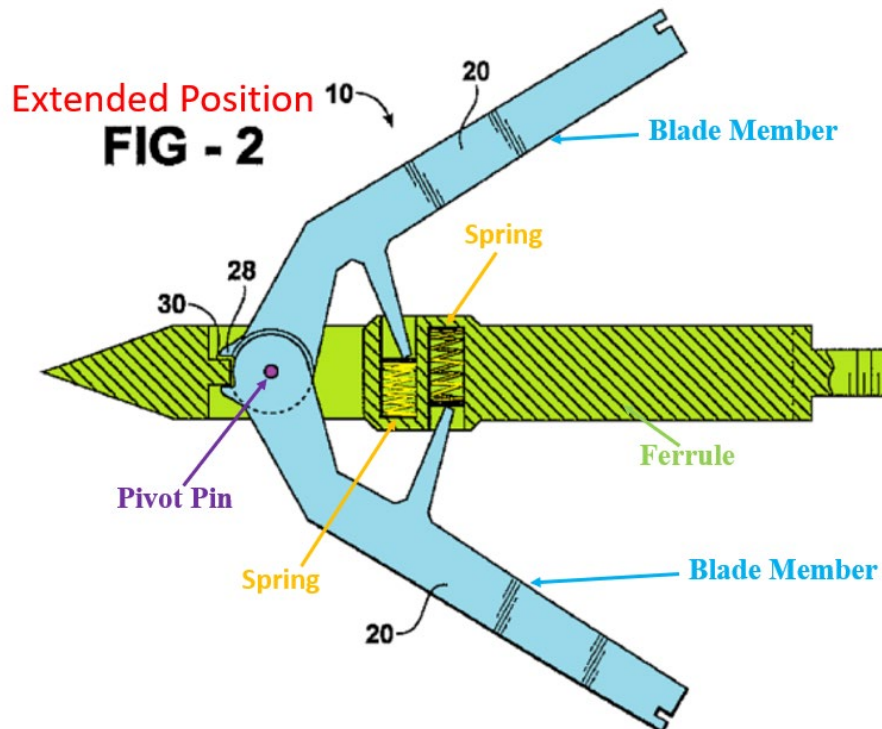
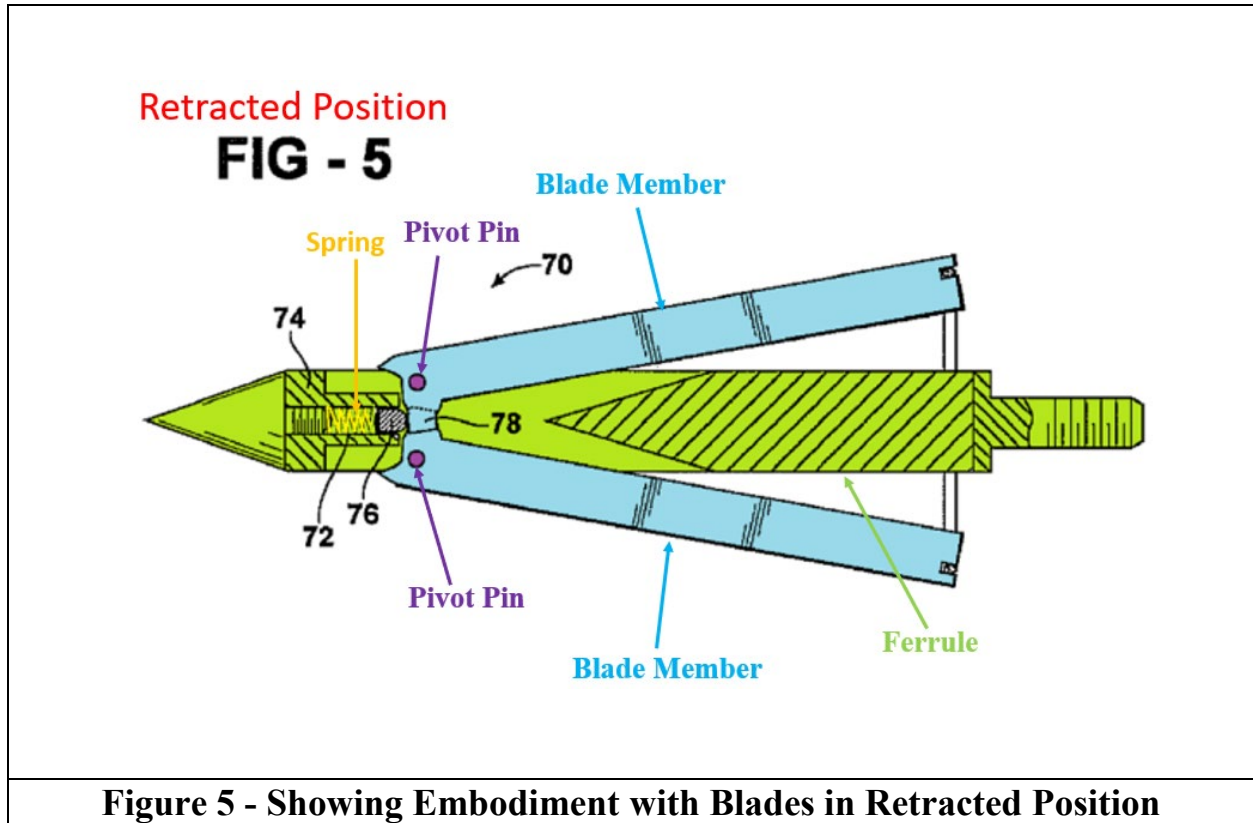
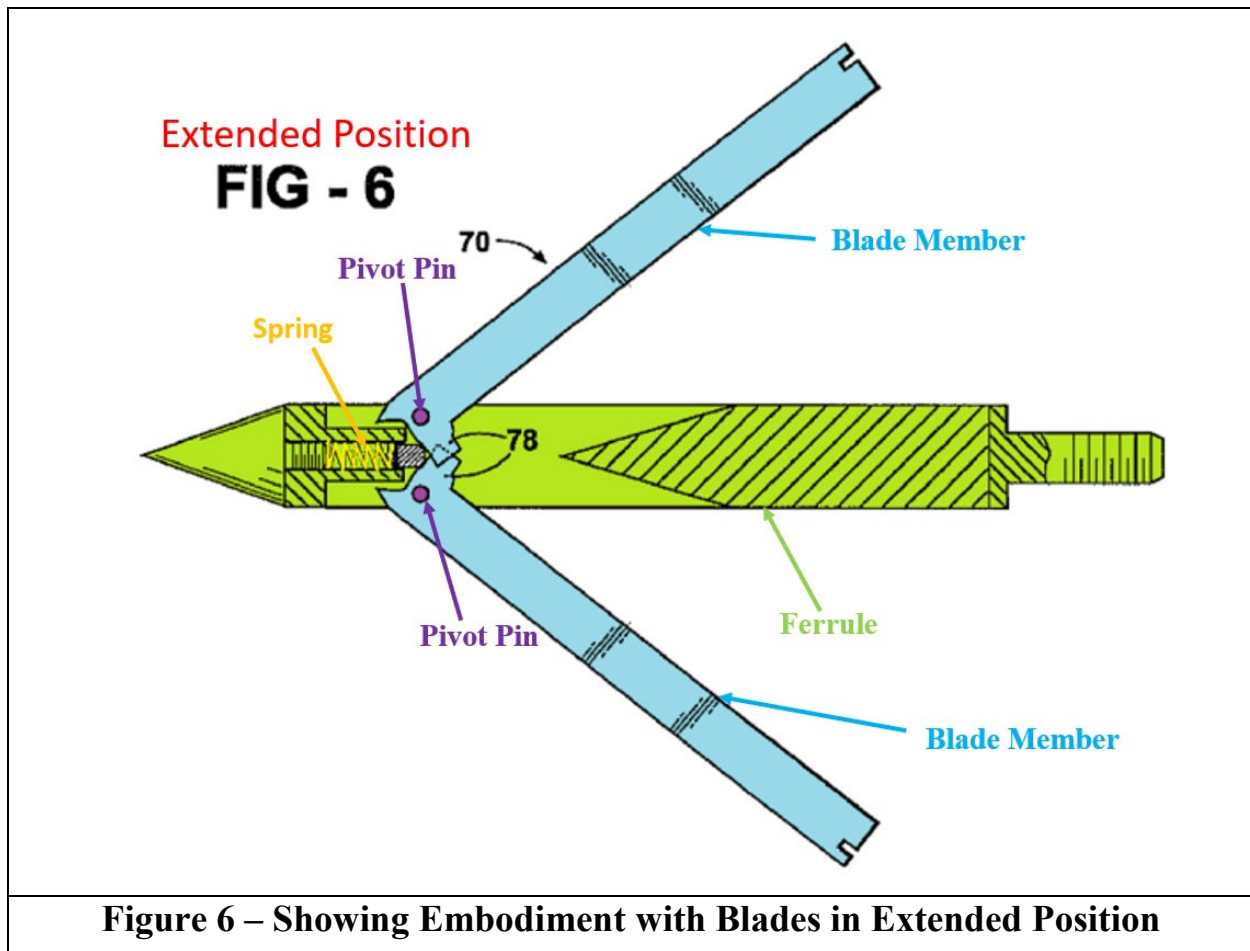


Figure 2 – Showing Embodiment with Blades in Extended Position

Figures 5 and 6 in the '177 show the blades biased by a single spring. Annotated versions of Figures 5 and 6, taken from the Declaration of Dr. Kuhn², are shown below.



² (Ex. 1019, ¶34).



C. Explanation of the Grounds

Numerous prior art references teach the same or similar arrowhead configurations as the '177 patent with blades biased in an extended position, or deployed position, by a biasing member, such as a spring. Petitioner relies on a subset of these prior art references.

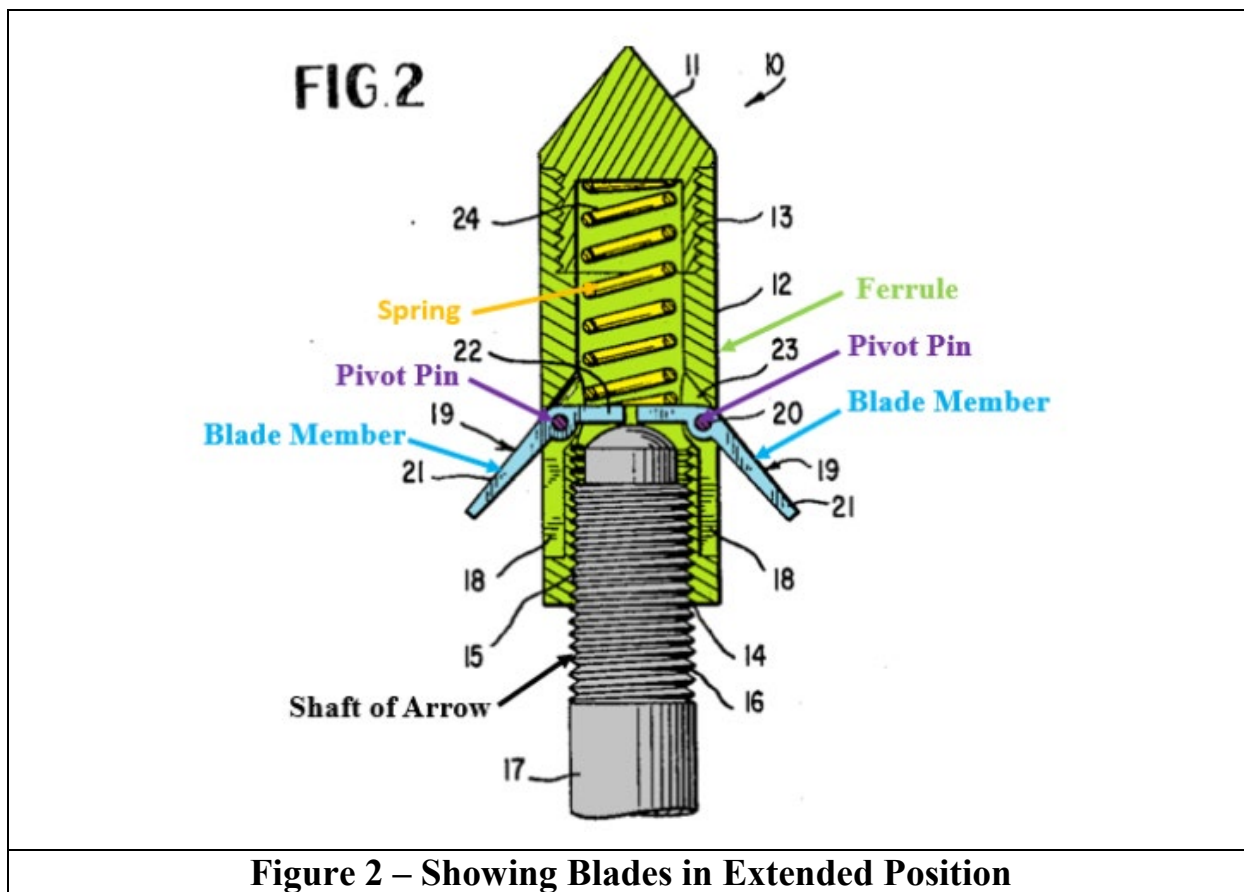
1. Lint

Lint (Ex. 1002) issued February 2, 1965, and is prior art to the '177 patent under pre-AIA 35 U.S.C. §102(b), as it was published more than one year prior to the filing date of the '177 patent, July 7, 2008 (Ex. 1001 at Cover). Lint is titled

“Hunting Arrowhead with Retractable Barbs,” and is directed toward “arrowhead structures generally and more particularly to an improved arrowhead which may be interchangeably employed for both target and hunting arrows.” (Ex. 1002, 1:8-10).

Lint describes an arrowhead 10 with a tubular body or ferrule 12. (*Id.*, 2:28-31). The rearward end of the ferrule 12 attaches to an arrow and the forward end of the ferrule 12 has a tip 11. (*Id.*, 2:29-38). The arrowhead 10 includes blade members, or barbs 19, pivotably connected to the ferrule 12 for movement between a retracted position and an extended position. (*Id.*, 2:42-47). A spring 24 biases the blade members, or barbs 19, toward the extended position. (*Id.*, 2:53-58). For example, an annotated version of Figure 2 in Lint, taken from the Declaration of Dr. Kuhn³, is reproduced below.

³ (Ex. 1019, ¶39).



2. Vandewater

Vandewater (Ex. 1003) issued September 13, 2011, and claims priority to Provisional Application No. 61/038,286 (Ex. 1004), filed on March 20, 2008. Vandewater is prior art to the '177 patent under pre-AIA 35 U.S.C. §102(e). Vandewater is titled “Arrowhead With Pivoting Blade” and is directed toward “arrowheads used in conjunction with archery hunting.” (Ex. 1003, 1:14-15).

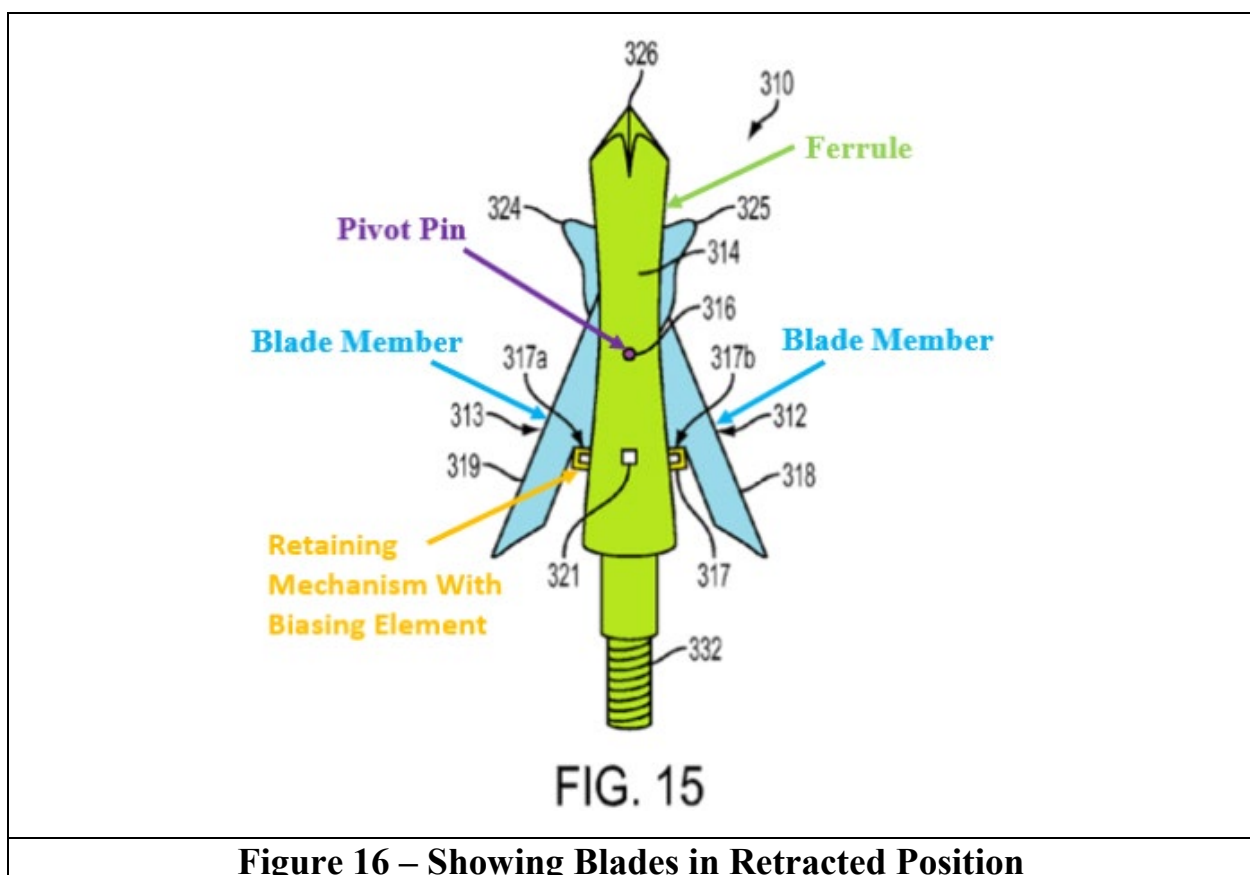
In an exemplary embodiment, Vandewater describes an arrowhead 210 with a tubular body or ferrule 214. (*Id.*, 3:13-16, 6:48-50). The rearward end of the ferrule 214 attaches to an arrow and the forward end of the ferrule 214 has a tip 226. (*Id.*,

6:54). The arrowhead 210 includes a first blade 212 and a second blade 213 pivotably connected to the ferrule 214 for movement between a retracted position and an extended position. (*Id.*, 6:45-48, Figs. 7-9, 15-18). Vandewater describes a retaining mechanism, such as a biasing element, that retains the blades 212, 213 in a deployed position. (*Id.*, 7:55-58, 7:64-8:2). Vandewater discloses the biasing element may be “a conventional spring-steel compression spring, or an elastomeric material such as rubber or the like.” (*Id.*, 3:63-66). Vandewater discloses that the retaining mechanism is biased or urged against a rear portion of the blades to resist pivotal movement unless and until the force acting against the cutting edges of the blades is sufficient to overcome a biasing force of the retaining mechanism and cause the blades to pivot. (*Id.*, 3:2-7).

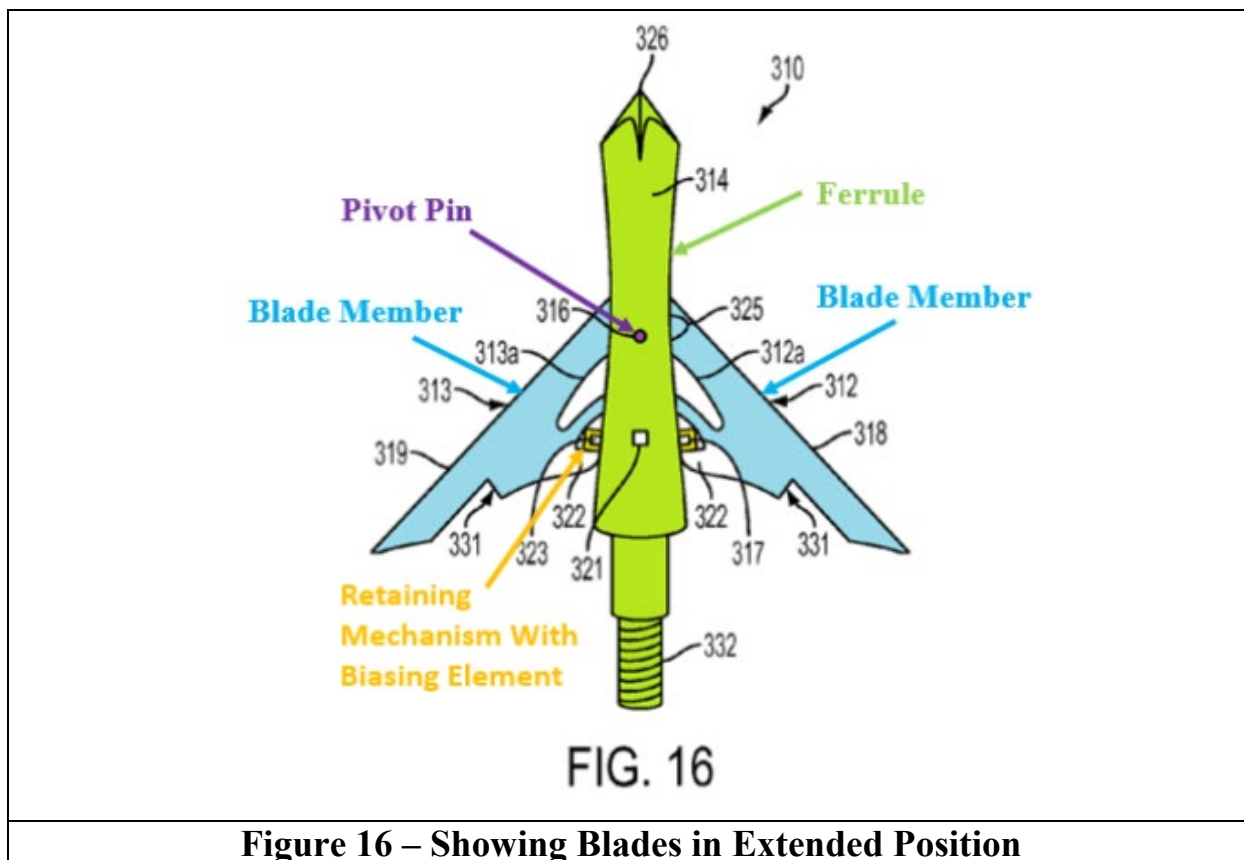
Vandewater discloses an advantage of such a blade configuration is that “the arrowhead may penetrate an animal and may continue penetration after impacting a bone with the blade by allowing the blade to pivot upon impact with the bone structure and thus allowing the arrowhead to continue penetration to one side of the bone structure.” (*Id.*, 2:66-3:4). Vandewater further discloses that the advantage of such a pivoting blade configuration is that it “allows for a large wound cavity with deeper penetration because the blade will pivot upon contact with bone or harder tissue. This allows an arrow equipped with the arrowhead disclosed herein to pass through the animal with less resistance and without being jolted off its intended

course. This provides enhanced penetration for increased bleeding of the animal, and therefore results in an efficient kill.” (*Id.*, 8:24-30). Vandewater also discloses that “[w]ith two pivotable blades, the flight characteristics can be improved still further, providing for a more aerodynamic arrowhead with the same or nearly the same potential for a large wound cavity associated with the single-blade embodiments.” (*Id.*, 8:34-38).

For example, annotated versions of Figures 15 and 16 in Vandewater, taken from the Declaration of Dr. Kuhn⁴, are shown below.



⁴ (Ex. 1019, ¶44).

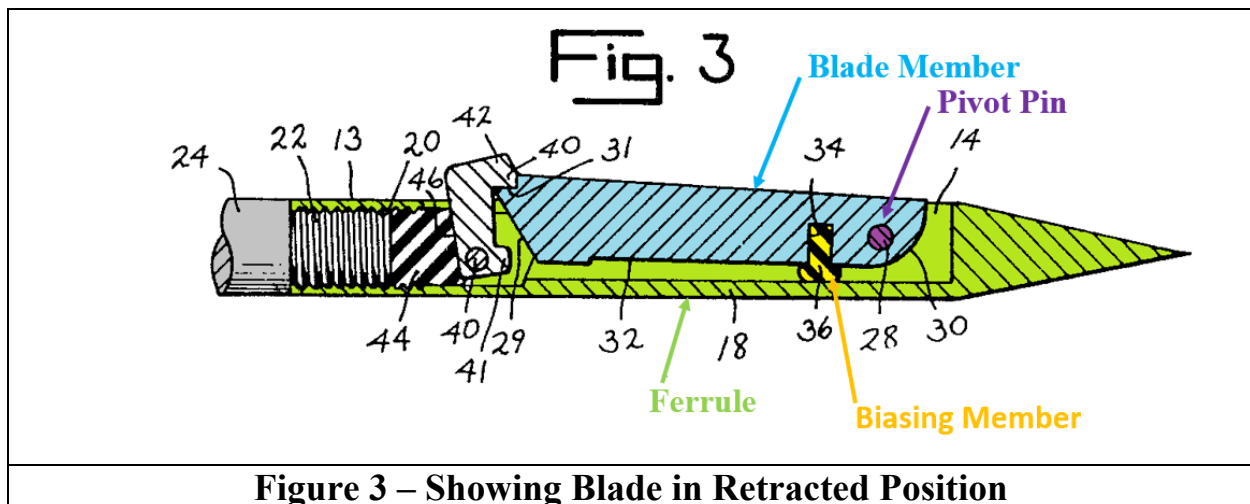


3. Hendricks

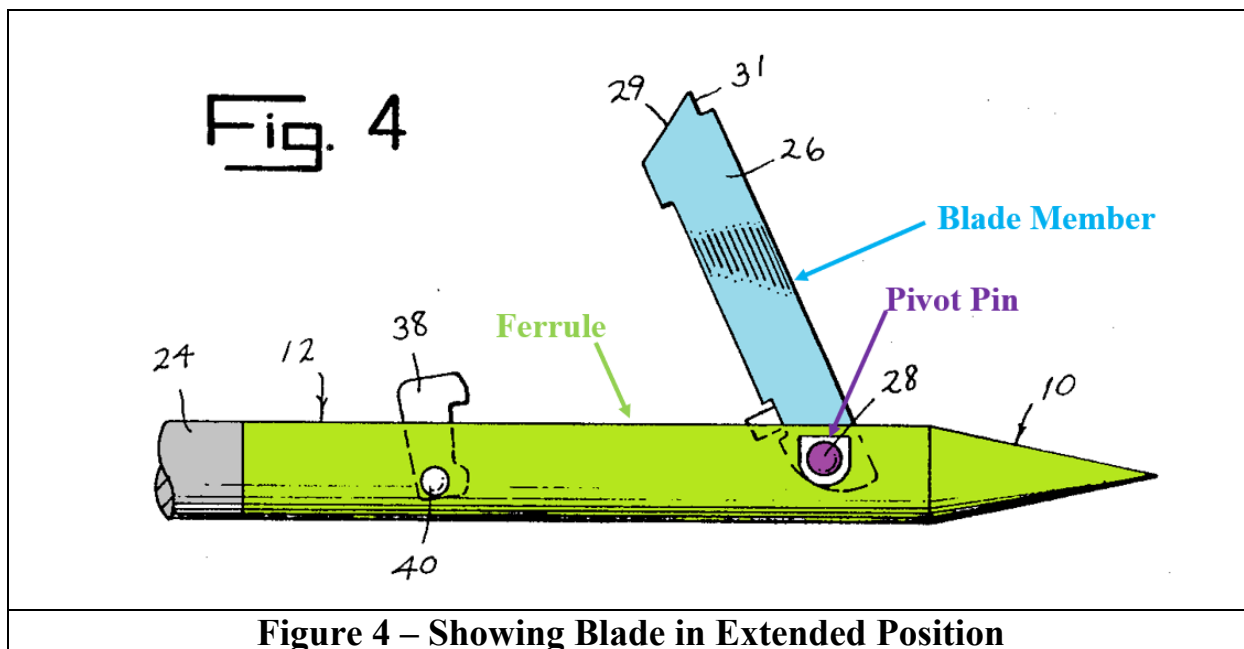
Hendricks (Ex. 1013) published August 24, 1971. Hendricks is prior art to the ‘177 patent under pre-AIA 35 U.S.C. §102(b). Hendricks is titled “Spear Head With Swingable Barb.” Hendrick discloses: a “head for a spear or like weapon having a tip section and a body section. An elongated barb is pivotally connected to the forward end of the body section and is received therein, and is resiliently urged outwardly therefrom.” (Ex. 1013, Abstract).

Hendricks discloses a weapon head 10 with a tubular body, or ferrule 12. (Ex. 1013, 1:72-75). The rearward end of the ferrule 12 attaches to a weapon shaft and

the forward end of the ferrule 12 has a tip 10. (*Id.*, 1:72-75, 2:2-5). The weapon head includes a blade member, or barb 26, pivotally connected to the ferrule 12 for movement between a retracted position and an extended position. (*Id.*, 2:7-9). A resilient member 36 biases the blade member, or barb 19, toward the extended position. (*Id.*, 2:28-32, 3:5-6 (“Barb 26 is then forced outwardly from its closed position by resilient member.”)). Annotated versions of Figures 3 and 4 in Hendricks, taken from the Declaration of Dr. Kuhn⁵, are below.



⁵ (Ex. 1019, ¶47).



4. Minisini

Minisini (Ex. 1005) issued September 17, 1957, and is prior art to the ‘177 patent under pre-AIA 35 U.S.C. §102(b). Minisini is titled “Arrowhead” and is directed toward “arrows and more particularly to an arrow especially designed for shooting fish, but which is adaptable for other uses.” (Ex. 1005, 1:15-17).

Minisini describes an arrowhead H with a ferrule 12. (*Id.*, 2:10-12). The rearward end of the ferrule 12 attaches to an arrow shaft and the forward end of the ferrule 12 has a penetrating point or tip 11. (*Id.*, 2:10-12, 20-23). The arrowhead H includes a blade member, or barb 20, pivotably connected to the ferrule 12 for movement between a retracted position and an extended position. (*Id.*, 2:27-31). Minisini discloses: “The barb preferably has its outer longitudinal edge sharpened to cut through a fish” (*Id.* at 2:31-34).

5. Krieger

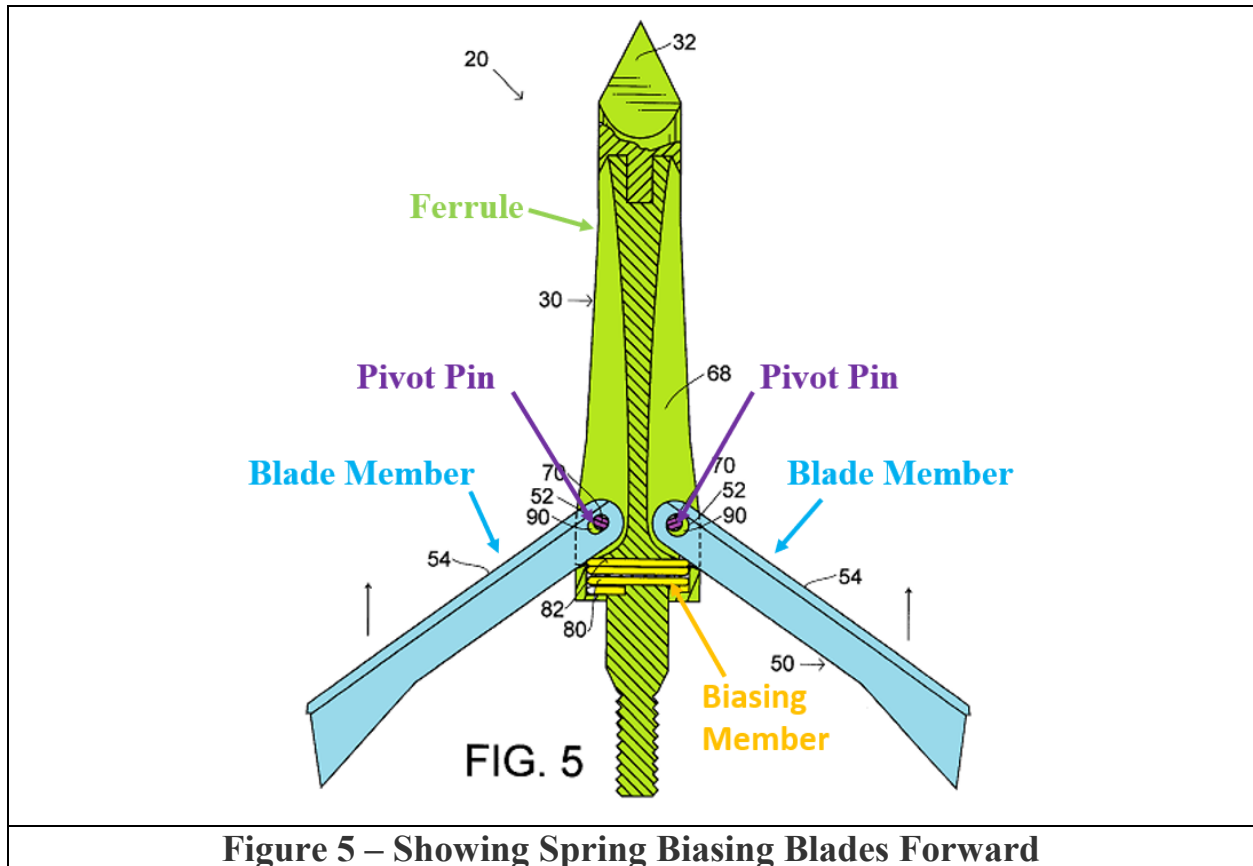
Krieger (Ex. 1006) issued September 12, 1938, and is prior art to the ‘177 patent under pre-AIA 35 U.S.C. §102(b). Krieger is titled “Arrowhead” and is directed toward “arrows and more particularly to arrowheads.” (Ex. 1006, 1:1-2).

Krieger discloses that the arrowhead 11 with a rearward end that attach to an arrow shaft 10. (*Id.*, 1:32-43). The arrowhead contains blade members 16 having rear or trailing edges, wherein the blades taper from their trailing edges to a penetrating point 18. (*Id.*, 1:44-50). Krieger discloses: “To reduce air friction the longitudinal edges of the wings or blades are sharpened to knife edges.” (*Id.*, 2:10-12).

6. Liechty, II

Liechty, II (Ex. 1012) issued September 11, 2001, and is prior art to the ‘177 patent under pre-AIA 35 U.S.C. §102(b). Liechty, II is titled “Non-Consumable Blade Retention For Blade-Opening Arrowheads.” Liechty, II discloses “[a] blade-opening arrowhead with a plurality of removable blades, each pivotally connected at one opposing blade end to an arrowhead body by a hinge pin.” (Ex. 1012, Abstract). Liechty, II discloses an arrowhead 20 with a tubular body, or ferrule 30. (*Id.*, 10:64-67, Fig. 5). The rearward end of the ferrule 30 attaches to an arrow and the forward end of the ferrule 30 has a tip. (*Id.*, 10:27; Fig. 5). The arrowhead 20 includes blade members pivotally connected to the ferrule 30. (*Id.*, 10:30-40). As

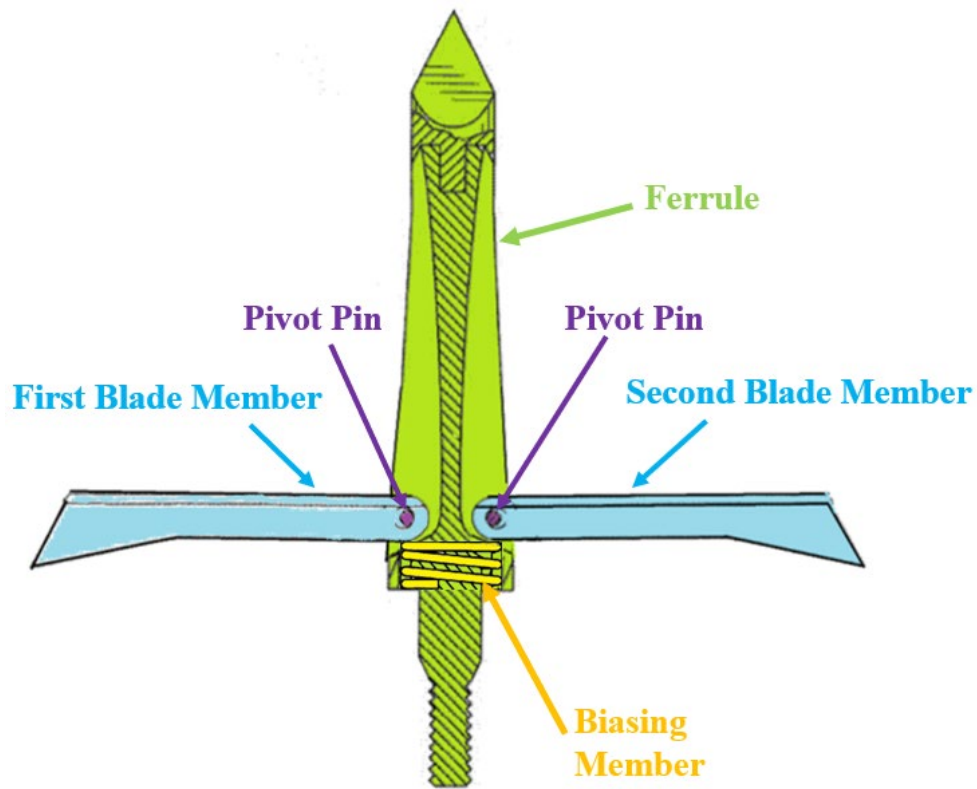
shown in Figure 5 in Liechty, II, “annular spring 80 drives or continually urges cutting edge 54 of each blade 50 in a forward direction, further slicing uncut or unpenetrated tissue.” (*Id.*, 12:16-18). An annotated version of Figure 5 in Liechty, II, taken from the Declaration of Dr. Kuhn⁶, is below.



A modified and annotated version of Figure 5 in Liechty, II, taken from the Declaration of Dr. Kuhn⁷, showing the blades biased further forward by the annular spring 80 is below.

⁶ (Ex. 1019, ¶57).

⁷ (*Id.*).



Modified Version of Figure 5 – Showing Spring Biasing Blades Further Forward

7. References are Analogous Art

Each of the prior art references relied on in this Petition is analogous art to the '177 patent and to the others, as each reference is in the same field of endeavor. (Ex. 1019, ¶34). The '177 patent and all the prior art are directed to arrowheads or broadheads. (*Id.*).

8. Additional Prior Art Confirming the General Knowledge of the Person Having Ordinary Skill in the Art

In addition to the references discussed above, Dr. Kuhn's Declaration addresses additional prior art confirming the general knowledge of the person having

ordinary skill in the art (“PHOSITA”) as of July 7, 2008, the filing date of the ‘177 patent (and several years prior).

The references relied upon on herein must be interpreted as a skilled artisan would, in light of knowledge of the art. *In re Graves*, 69 F.3d 1147, 1152 (Fed. Cir. 1995). Non-instituted references show “the knowledge that skilled artisans would bring to bear in reading the prior art.” *Ariosa Diagnostics v. Verinata Health, Inc.* 805 F.3d 1359, 1365 (Fed. Cir. 2015).

V. CLAIM INTERPRETATION

A claim subject to IPR shall be given its ordinary and customary meaning to a PHOSITA, consistent with the prosecution history, as it would be given in a civil action under 35 U.S.C. § 282(b). 37 C.F.R. § 42.100(b). All claim terms not addressed below should be construed according to their ordinary and customary meaning at the time of invention to a PHOSITA.

A. “ferrule”

Claims 1-17 recite a “ferrule.” The specification of the ‘177 patent defines “ferrule” as a “generally cylindrical body.” (Ex. 1001, 2:53-55). This interpretation is consistent with the ordinary meaning to a PHOSITA. (Ex. 1019, ¶61).

VI. THRESHOLD REQUIREMENT FOR INTER PARTES REVIEW

This Petition and the supporting evidence demonstrate “a reasonable likelihood that petitioner would prevail with respect to at least one of the claims

challenged in the petition.” 35 U.S.C. § 314(a). Claims 1-4, 7, 9, 11, 12, 15, and 17 are anticipated and/or would have been obvious over the prior art, as explained in detail by Dr. Kuhn (Ex. 1019).

VII. CLAIM-BY-CLAIM EXPLANATION OF GROUND 1 FOR UNPATENTABILITY OF CLAIMS 1-4, 7, 9, 11, 12, 15, AND 17

Pursuant to Rule 42.104(b)(4)-(5), the specific grounds discussed below and in the Declaration of Dr. Kuhn demonstrate that the challenged claims are invalid because they are anticipated by Lint.

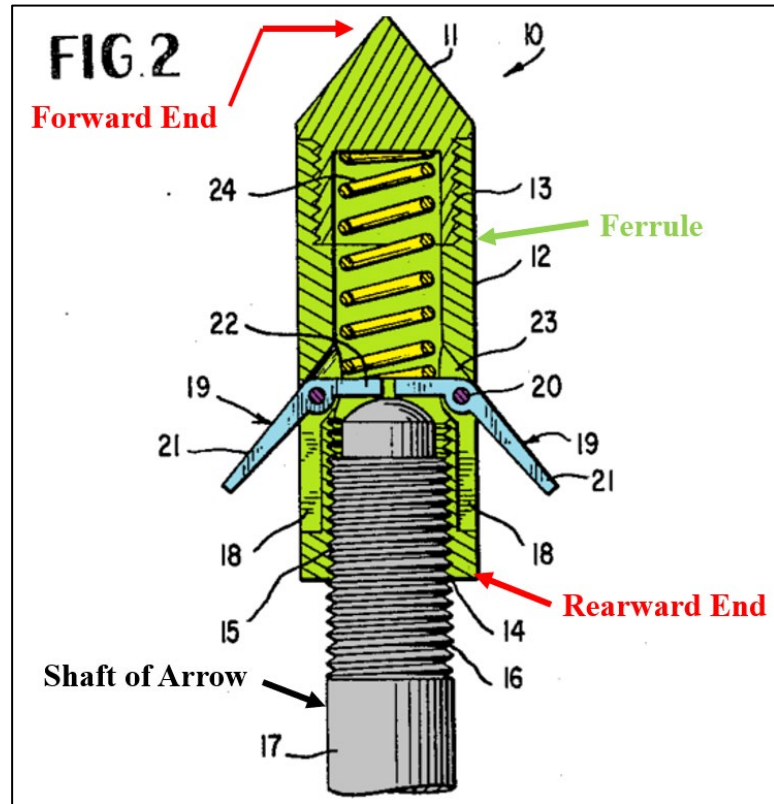
A. Independent Claim 1

The preamble to claim 1 recites “A broadhead for an arrow having a shaft, the broadhead comprising” To extent the preamble is limiting, Lint discloses an “arrowhead” that connects to “one end of an arrow shaft 17.” (Exs. 1002, 2:29-38; 1019, ¶¶64, 66).

- 1. “a ferrule having a rearward end configured for attachment to the shaft and an opposite forward end with a ferrule body extending therebetween;”**

Lint discloses that “the arrowhead of the present invention indicated generally at 10 includes a forward or pointed tip portion 11 and a body portion 12. The tip portion 11 may be removably attached to the body portion 12, as indicated at 13 in FIGURES 2 and 3, or the tip may be integrally secured to the body 12. The body 12 is of a generally tubular shape and is provided with a bore 14 which is internally threaded as indicated at 15. The threads 15 of the bore 14 engage with threads 16

provided upon one end of an arrow shaft 17.” (Exs. 1002, 2:29-38 and Fig. 1;1019, ¶¶64, 67). An annotated version of Figure 2 of Lint, taken from the Declaration of Dr. Kuhn⁸, is shown below.

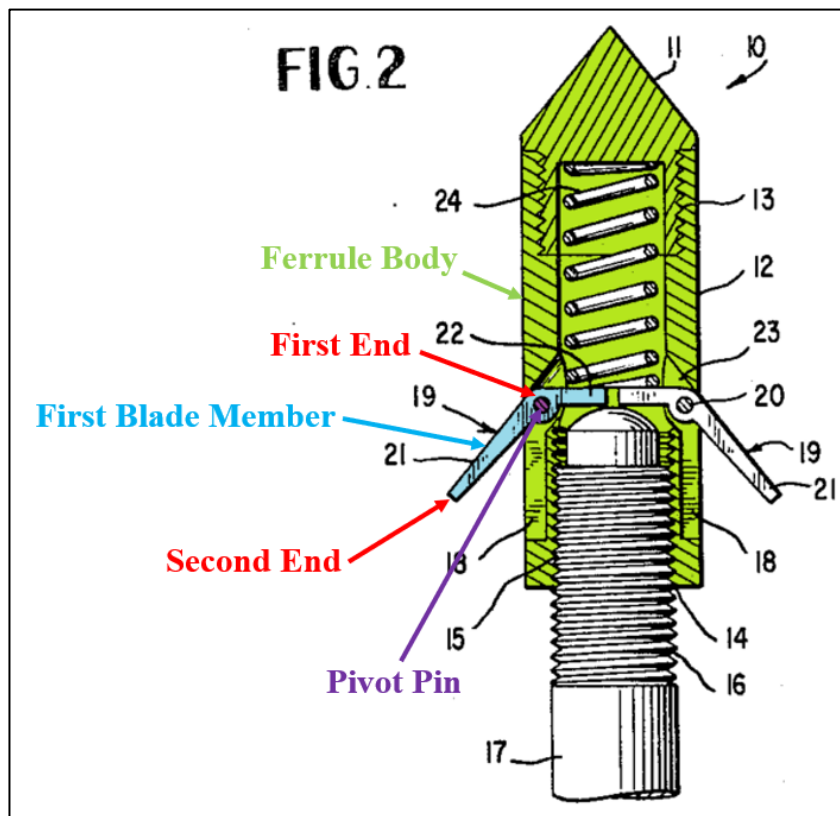


2. “a first blade member having a first end pivotally interconnected with the ferrule body and an opposite second end,”

Lint discloses: “The tubular body 12 of the arrowhead 10 is provided with two longitudinally extending slots or depressions 18 which are oppositely disposed at either side of the body 12. A barb 19 is contained in each of the slots 18 and is pivoted

⁸ (Ex. 1019, ¶¶67).

to the tubular body 12 by means of a pivot pin 20.” (Exs. 1002, 2:39-45 and Fig. 2; 1019, ¶¶64, 68). An annotated version of Figure 2 of Lint, taken from the Declaration of Dr. Kuhn⁹, is shown below.

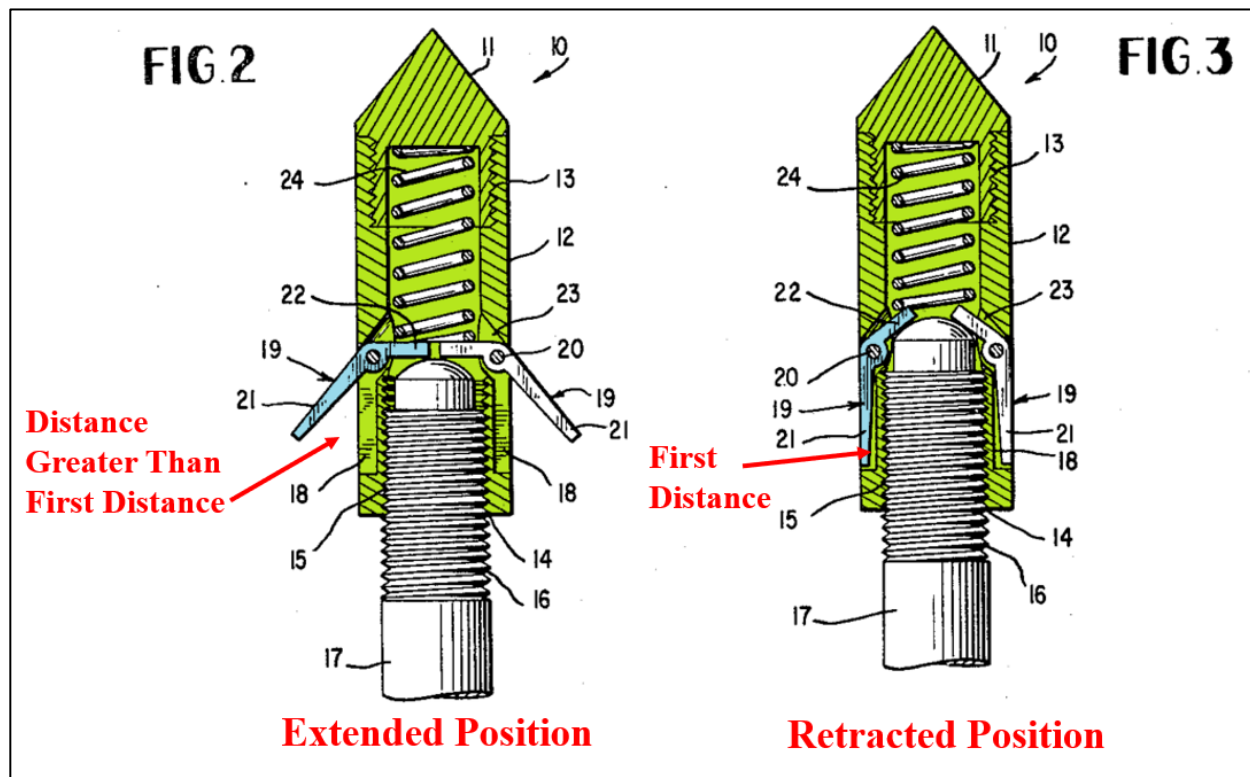


3. “the first blade member having a retracted position wherein the second end is spaced from the ferrule body at a first distance and an extended position wherein the second end is spaced from the ferrule body by a distance which is greater than the first distance;”

Lint discloses: “Each of said barbs 19 includes an outer barb portion 21 which projects outwardly and rearwardly of the arrowhead body 12 when the barbs 19 are

⁹ (Ex. 1019, ¶68).

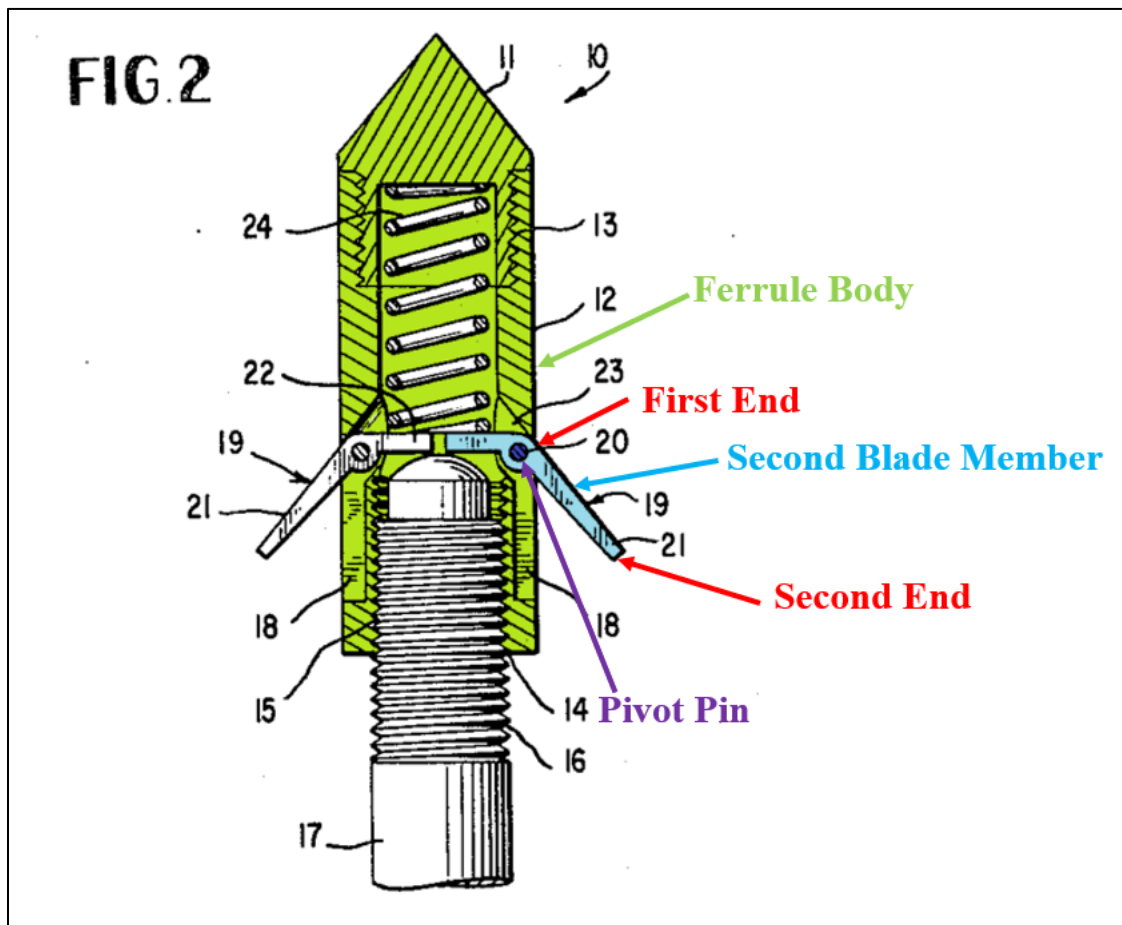
in the open position as illustrated by FIGURE 2.” (Exs. 1002, 2:45-48 and Fig. 2; 1019, ¶¶64, 69). Lint discloses “when the arrowhead 10 penetrates the flesh of an animal, the initial impact on the outer portions 21 of the barbs 19 causes the barbs to be retracted into the slots 18 against the bias of the spring 24.” (Exs. 1002, 2:64-67; 1019, ¶¶64, 69). Figures 2 and 3 of Lint shows that the space between the first blade member and the ferrule body is greater when the first blade member is in an extended position. (Exs. 1002, Figs. 2 and 3; 1019, ¶¶64, 69). Annotated versions of Figures 2 and 3, taken from the Declaration of Dr. Kuhn¹⁰, are shown below.



¹⁰ (Ex. 1019, ¶¶69).

4. “a second blade member having a first end pivotally interconnected with the ferrule body and an opposite second end,”

Lint discloses: “The tubular body 12 of the arrowhead 10 is provided with two longitudinally extending slots” and a “barb 19 is contained in each of the slots 18 and is pivoted to the tubular body 12 by means of a pivot pin 20.” (Exs. 1002, 2:39-45 and Fig. 2; 1019, ¶¶64, 70). An annotated version of Figure 2, taken from the Declaration of Dr. Kuhn¹¹, is shown below.

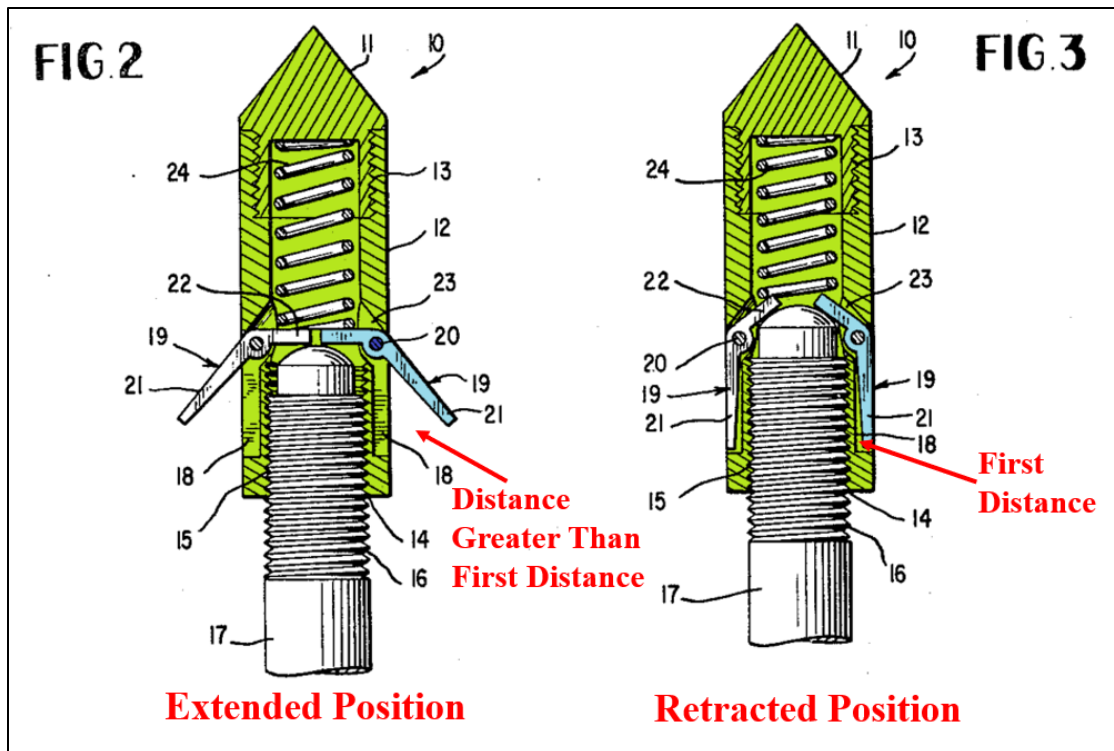


¹¹ (Ex. 1019, ¶70).

5. **“the [second] blade member having a retracted position wherein the second end is spaced from the ferrule body at a first distance and an extended position wherein the second end is spaced from the ferrule body by a distance which is greater than the first distance; and”**

Lint discloses: “Each of said barbs 19 includes an outer barb portion 21 which projects outwardly and rearwardly of the arrowhead body 12 when the barbs 19 are in the open position as illustrated by FIGURE 2.” (Exs. 1002, 2:45-48 and Fig. 2; 1019, ¶¶64, 71). Lint discloses “when the arrowhead 10 penetrates the flesh of an animal, the initial impact on the outer portions 21 of the barbs 19 causes the barbs to be retracted into the slots 18 against the bias of the spring 24.” (Exs. 1002, 2:64-67; 1019, ¶¶64, 71). Figures 2 and 3 of Lint shows that the space between the second blade member and the ferrule body is greater when the second blade member is in an extended position. (Exs. 1002, Figs. 2 and 3; 1019, ¶¶64, 71). Annotated versions of Figures 2 and 3, taken from the Declaration of Dr. Kuhn¹², are shown below.

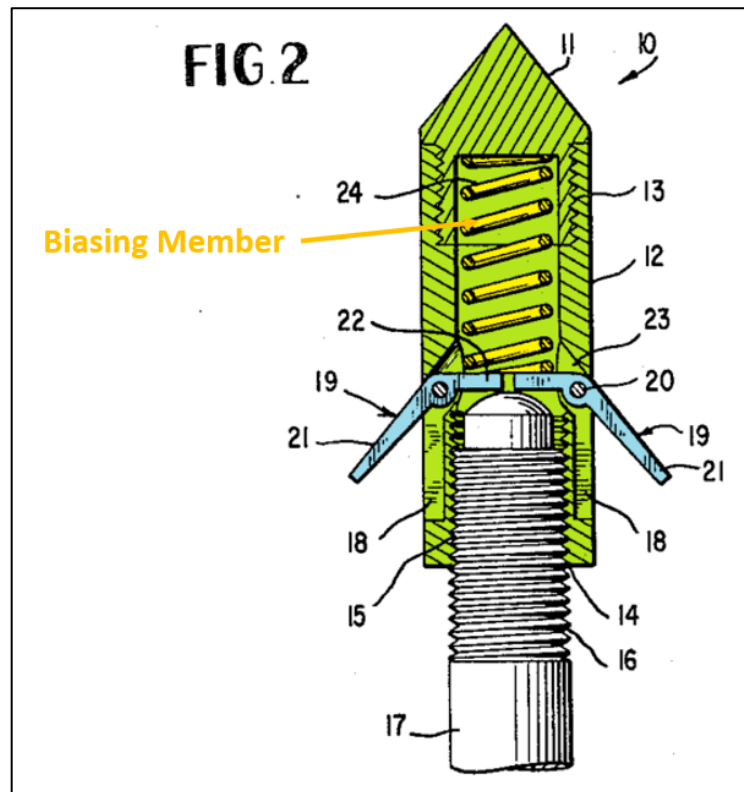
¹² (Ex. 1019, ¶71).



6. “at least one biasing member biasing the first and second blade members towards the extended positions, the biasing member being the only element operable to hold the blade members in the extended position.”

Lint discloses: “A spring 24 is provided within the bore 14 of the body 12 and extends between the tip portion 11 of the arrowhead 10 and the forward surface of the transversely extending inner barb portions 22. This spring operates to bias the barbs 19 in the open position illustrated by FIGURE 2.” (Exs. 1002, 2:53-58 and Fig. 2; 1019, ¶¶64, 72). As shown in Figure 2 in Lint, the spring is the only element

operable to hold the blade members in the extended position. (*Id.*). An annotated version of Figure 2, taken from the Declaration of Dr. Kuhn¹³, is shown below.

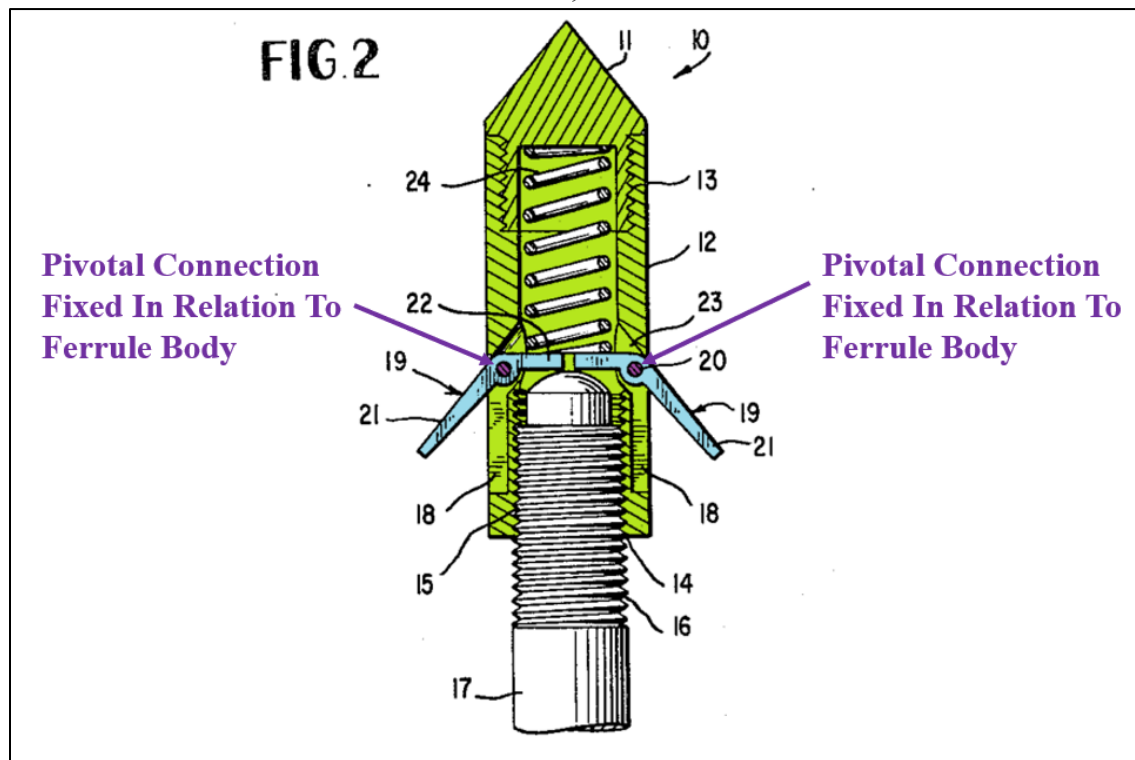


B. Dependent Claim 2

Dependent claim 2 depends from claim 1 and adds “wherein: the pivotal interconnection between the first blade member and the ferrule body is at a fixed position relative to the ferrule body; and the pivotal interconnection between the second blade member and the ferrule body being at a fixed position relative to the ferrule body.” As shown in Figures 2 and 3 of Lint, the pivotal interconnections

¹³ (Ex. 1019, ¶72).

between the first blade member and the ferrule body and between the second blade member and the ferrule body are fixed position relative to the ferrule body. (Exs. 1002, Figs. 2 and 3; 1019, ¶¶64, 73). Annotated versions of Figure 2 and Figure 3, taken from the Declaration of Dr. Kuhn¹⁴, are shown below.

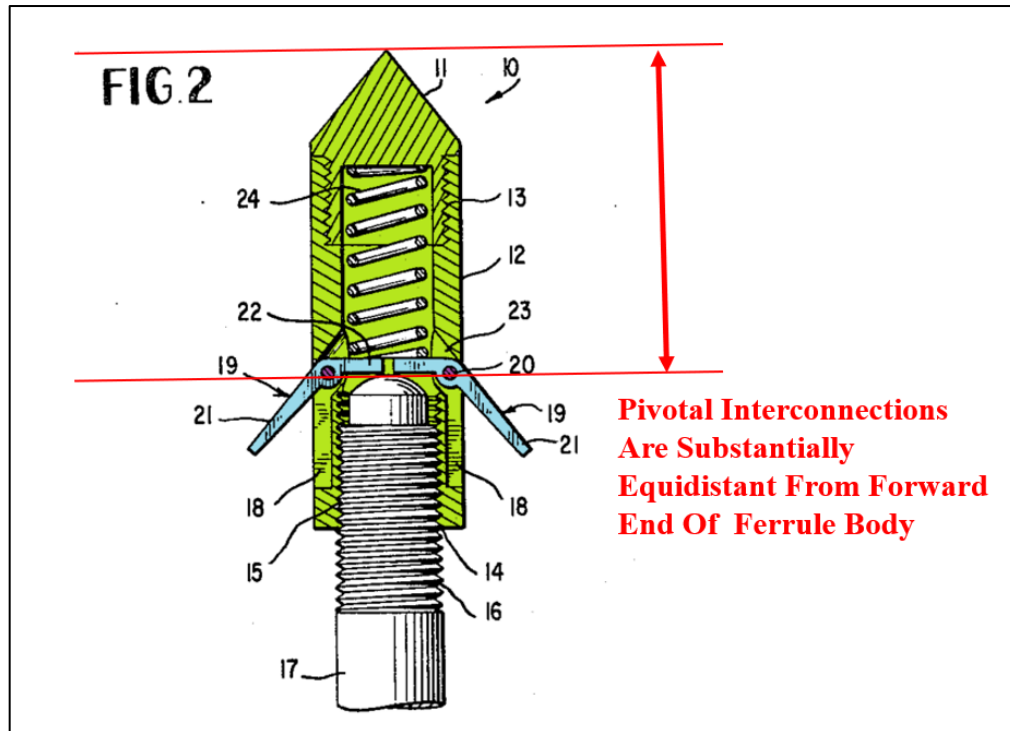


C. Dependent Claim 3

Dependent claim 3 depends from claim 2 and adds “wherein: the pivotal interconnection between the first blade member and the ferrule body and the pivotal interconnection between the second blade member and the ferrule body are substantially equidistant from the forward end of the ferrule.” As shown in Figure 2 of Lint, the pivotal interconnections between the first blade member and the ferrule

¹⁴ (Ex. 1019, ¶73).

body and between the second blade member and the ferrule body are substantially equidistant from the forward end of the ferrule. (Exs. 1002, Fig. 2; 1019, ¶¶64, 74). An annotated version of Figure 2, taken from the Declaration of Dr. Kuhn¹⁵, is shown below.



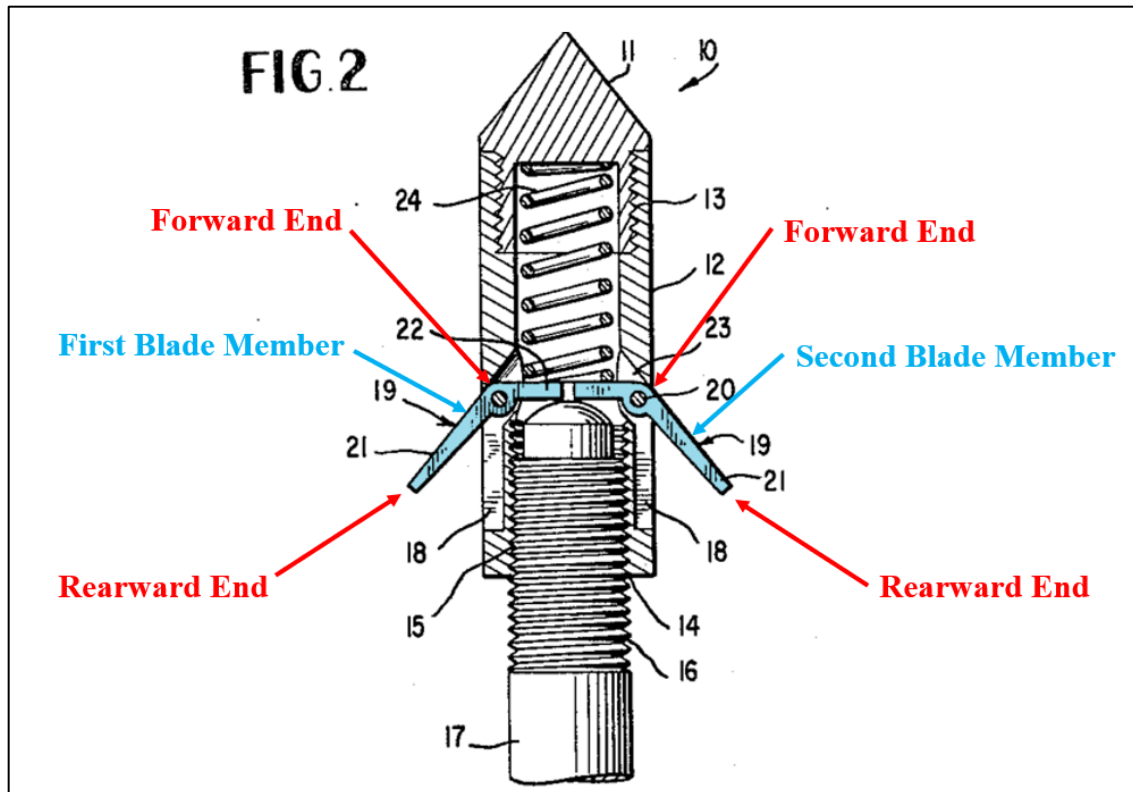
D. Dependent Claim 4

Dependent claim 4 depends from claim 1 and adds “wherein: the first ends of the first and second blade members are forward ends and the second ends are rearward ends.” Figure 2 of Lint, for example, shows the first ends of the first and second blade members are forward ends and the second ends are rearward ends.

¹⁵ (Ex. 1019, ¶74).

(Exs. 1002, Fig. 2; 1019, ¶¶64, 75). An annotated version of Figure 2, taken from the Declaration of Dr. Kuhn¹⁶, is shown below.

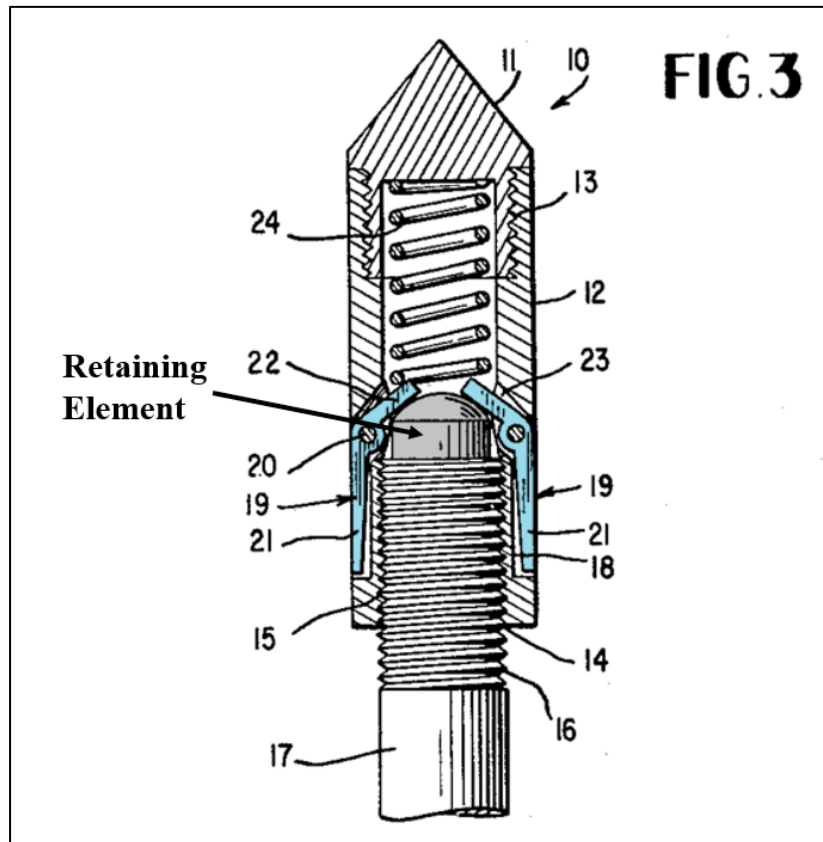
E. Dependent Claim 7



Dependent claim 7 depends from claim 1 and adds “a retaining element engaging the blade members to maintain the blade members in the retracted position.” Lint discloses: “To remove the arrowhead from the animal, the barbs may be again retracted by threading the shaft 17 into the bore 14 until the shaft contacts the outer surfaces of the inner barb portions 22. When this contact occurs, further inward threading of the shaft within the bore 14 will cause the barbs 19 to be

¹⁶ (Ex. 1019, ¶75).

retracted within the slots 18, as illustrated by FIGURE 3.” (Exs. 1002, 2:70-3:4; 1019, ¶¶64, 76). An annotated version of Figure 3, taken from the Declaration of Dr. Kuhn¹⁷, is shown below.



F. Dependent Claim 9

Dependent claim 9 depends from claim 1 and adds “wherein: the biasing member is a coil spring.” Lint discloses a “spring 24” that “operates to bias the barbs

¹⁷ (Ex. 1019, ¶76).

19 in the open position illustrated by FIGURE 2.” (Exs. 1002, 2:53-58 and Fig. 2; 1019, ¶¶64, 77).

G. Independent Claim 11

The preamble to claim 11 recites: “A broadhead for an arrow having a shaft, the broadhead comprising: . . .” To the extent the preamble is limiting, Lint discloses an “arrowhead” that connects to “one end of an arrow shaft 17.” (Exs. 1002, 2:29-38; 1019, ¶¶64, 78).

- 1. “a ferrule having a rearward end configured for attachment to the shaft and an opposite forward end with a ferrule body extending therebetween,”**

As discussed above in Section VII.A.1, Lint discloses a ferrule having a rearward end configured for attachment to the shaft and an opposite forward end with a ferrule body extending therebetween. (Exs. 1002, 2:29-38 and Fig. 1; 1019, ¶¶64, 79). An annotated version of Figure 2 of Lint is shown above in Section VII.A.1.

- 2. “the forward end of the ferrule defining the forward tip of the arrow and being fixed with respect to the ferrule body;”**

Lint discloses: “[T]he arrowhead of the present invention indicated generally at 10 includes a forward or pointed tip portion 11 and a body portion 12. The tip portion 11 may be . . . integrally secured to the body 12.” (Exs. 1002, 2:29-34; 1019, ¶¶64, 80).

3. “a first blade member having a forward end pivotally interconnected with the ferrule body and an opposite rearward end,”

As discussed above in Section VII.A.2, Lint discloses a first blade member having a forward end pivotally interconnected with the ferrule body and an opposite rearward end. (Exs. 1002, 2:43-45 and Fig. 2; 1019, ¶¶64, 81). An annotated version of Figure 2, for example, is shown above in Section VII.A.2.

4. “the first blade member having a retracted position wherein the rearward end is spaced from the ferrule body at a first distance and an extended position wherein the rearward end is spaced from the ferrule body by a distance which is greater than the first distance,”

As discussed in Section VII.A.3, Figures 2 and 3 of Lint show that the space between the first blade member and the ferrule body is greater when the first blade member is in an extended position. (Exs. 1002, Figs. 2 and 3; 1019, ¶¶64, 82). Annotated versions of Figures 2 and 3 are shown above in Section VII.A.3.

5. “the pivotal interconnection between the first blade member and the ferrule body being at a fixed position relative to the ferrule body;”

As discussed above in Section VII.B, Figures 2 and 3 disclose that the pivotal interconnection between the first blade member and the ferrule body is at a fixed position relative to the ferrule body. (Exs. 1002, 2:43-45 and Fig. 2; 1019, ¶¶64, 83). An annotated version of Figure 2 is shown above in Section VII.B.

6. “a second blade member having a forward end pivotally interconnected with the ferrule body and an opposite rearward end,”

As discussed above in Section VII.A.4, Figure 2 in Lint, for example, shows the second blade member, or barb, has a forward end pivotally interconnected with the ferrule body and an opposite rearward end. (Exs. 1002, 2:43-45 and Fig. 2; 1019, ¶¶64, 84). An annotated version of Figure 2 is shown above in Section VII.A.4.

7. “the second blade member having a retracted position wherein the rearward end is spaced from the ferrule body at a first distance and an extended position wherein the rearward end is spaced from the ferrule body by a distance which is greater than the first distance,”

As discussed above in Section VII.A.5, Figures 2 and 3 of Lint show that the space between the second blade member and the ferrule body is greater when the second blade member is in an extended position. (Exs. 1002, 2:45-48 and Fig. 2; 1019, ¶¶64, 85). Annotated versions of Figures 2 and 3 are in Section VII.A.5.

8. “the pivotal interconnection between the second blade member and the ferrule body being at a fixed position relative to the ferrule body; and”

As discussed above in Section VII.B, Figures 2 and 3 disclose that the pivotal interconnection between the second blade member and the ferrule body is at a fixed position relative to the ferrule body. (Exs. 1002, 2:43-45 and Fig. 2; 1019, ¶¶64, 86). An annotated version of Figure 2 is shown in Section VII.B.

9. “at least one biasing member biasing the first and second blade members towards the extended positions.”

Lint discloses a “spring 24” that “operates to bias the barbs 19 in the open position illustrated by FIGURE 2.” (Exs. 1002, 2:53-58 and Fig. 2; 1019, ¶¶64, 87). An annotated version of Figure 2 is shown above in Section VII.A.6.

H. Dependent Claim 12

Dependent claim 12 depends from claim 11 and adds “wherein: the pivotal interconnection between the first blade member and the ferrule body and the pivotal interconnection between the second blade member and the ferrule body are substantially equidistant from the forward end of the ferrule.” As shown in Figure 2 in Lint, the pivotal interconnections between the first blade member and the ferrule body and between the second blade member and the ferrule body are substantially equidistant from the forward end of the ferrule. (Exs. 1002, Fig. 2; 1019, ¶¶64, 88). An annotated version of Figure 2 is shown above in Section VII.C.

I. Dependent Claim 15

Dependent claim 15 depends from claim 11 and adds “a retaining element engaging the blade members to maintain the blade members in the retracted position.” Lint discloses: “To remove the arrowhead from the animal, the barbs may be again retracted by threading the shaft 17 into the bore 14 until the shaft contacts the outer surfaces of the inner barb portions 22. When this contact occurs, further inward threading of the shaft within the bore 14 will cause the barbs 19 to be

retracted within the slots i8, as illustrated by FIGURE 3.” (Exs. 1002, 2:70-3:4; 1019, ¶¶64, 89). An annotated version of Figure 3 is shown above in Section VII.E.

J. Dependent Claim 17

Dependent claim 17 depends from claim 11 and adds “wherein: the biasing member is a coil spring.” Lint discloses a “spring 24 that “operates to bias the barbs 19 in the open position illustrated by FIGURE 2.” (Exs. 1002, 2:53-58 and Fig. 2; 1019, ¶¶64, 90).

VIII. CLAIM-BY-CLAIM EXPLANATION OF GROUND 2 FOR UNPATENTABILITY OF CLAIMS 11, 12, 15, AND 17

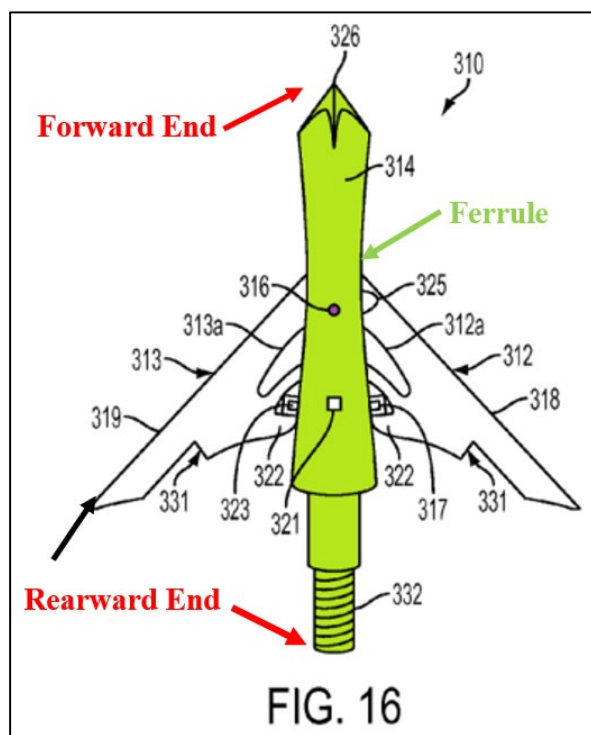
Pursuant to Rule 42.104(b)(4)-(5), the specific grounds discussed below and in the Declaration of Dr. Kuhn demonstrate that the challenged claims are invalid because they are anticipated by Vandewater.

A. Independent Claim 11

The preamble to claim 11 recites: “A broadhead for an arrow having a shaft, the broadhead comprising:” Vandewater discloses a “pivotable arrowhead for an arrow” (Exs. 1003, 1:33-34; 1019, ¶¶91, 93). Vandewater discloses that the arrowhead has a “body 14” and “may further include an externally threaded portion 32 for connection to an arrow shaft. (Exs. 1003, 3:29-36; 1019, ¶¶91, 93).

1. **“a ferrule having a rearward end configured for attachment to the shaft and an opposite forward end with a ferrule body extending therebetween,”**

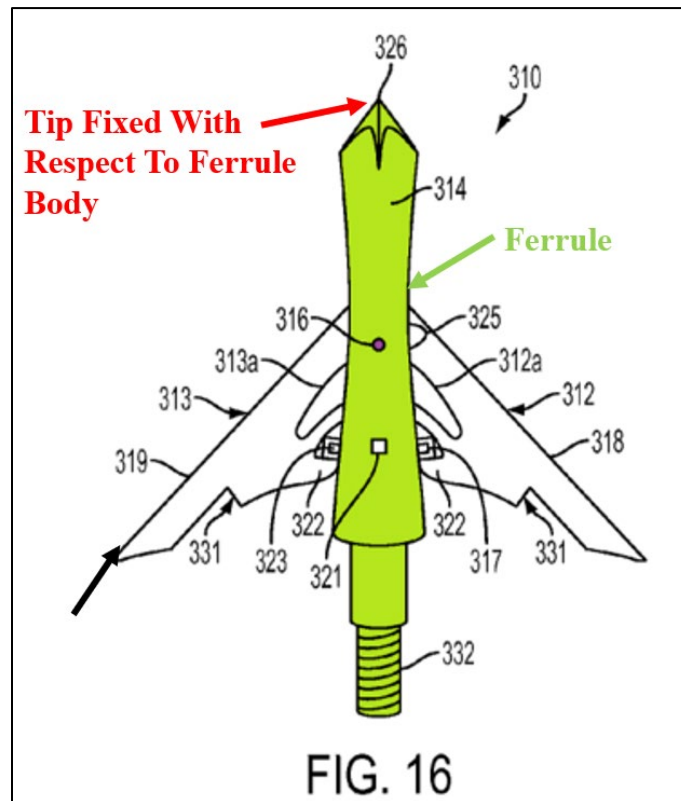
Vandewater discloses that “body 14 has an elongated shape, such as a cylindrical shape, and may have a substantially pointed portion or tip 26.” (Exs. 1003, 3:13-15; 1019, ¶¶91, 94). Vandewater further discloses that body 14 “may further include an externally threaded portion 32 for connection to an arrow shaft.” (Exs. 1003, 3:29-30; 1019, ¶¶91, 94). An annotated version of Figure 16, taken from the Declaration of Dr. Kuhn¹⁸, is shown below.



¹⁸ (Ex. 1019, ¶94).

2. “the forward end of the ferrule defining the forward tip of the arrow and being fixed with respect to the ferrule body;”

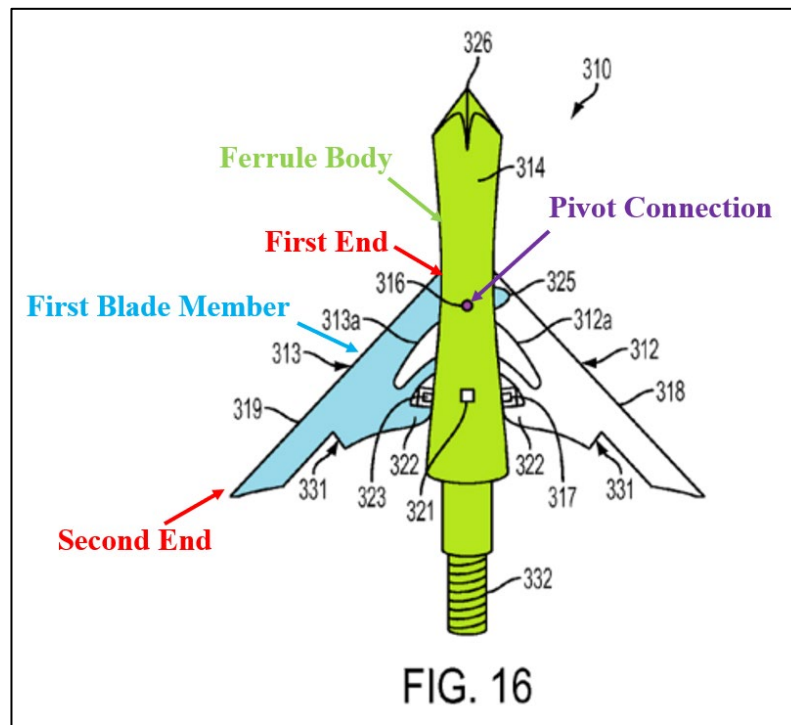
Vandewater discloses that a “body 14 has an elongated shape, such as a cylindrical shape, and may have a substantially pointed portion or tip 26.” (Exs. 1003, 3:13-15; 1019, ¶¶91, 95). As shown in Figure 16 in Vandewater, for example, the forward tip is fixed with respect to the ferrule body. (Ex. 1019, ¶95). An annotated version of Figure 16, taken from the Declaration of Dr. Kuhn¹⁹, is shown below.



¹⁹ (Ex. 1019, ¶95).

3. “a first blade member having a forward end pivotally interconnected with the ferrule body and an opposite rearward end,”

Vandewater discloses: “The pivot connection between blades 212 and 213 and body 214 allows the blades to fold or deploy and to pivot after deployment, and may be made with a set screw or other threaded connector or the like. Alternatively, the pivot connection may be established with an interference-fit pin, cotter pin, or other such device, as will be apparent to the skilled artisan.” (Exs. 1003, 7:33-39 and Figs. 7-11 and 15-20; 1019, ¶¶91, 96). An annotated version of Figure 16, taken from the Declaration of Dr. Kuhn²⁰, is shown below.



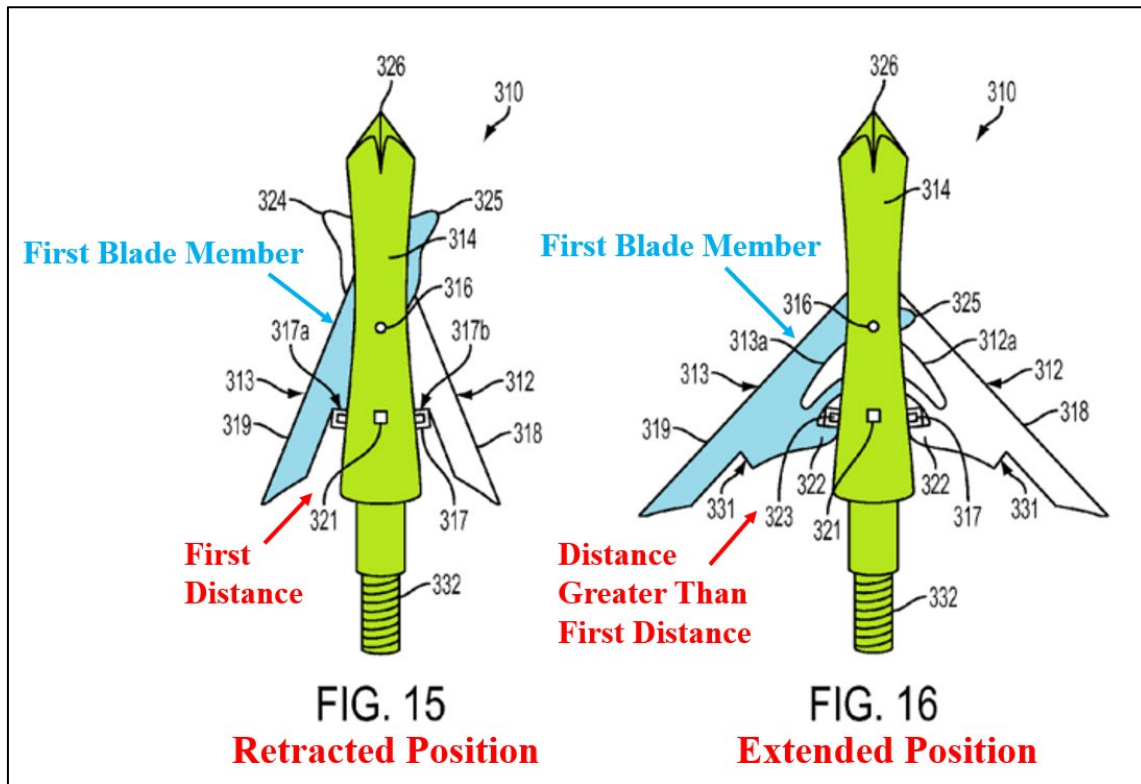
²⁰ (Ex. 1019, ¶96).

4. **“the first blade member having a retracted position wherein the rearward end is spaced from the ferrule body at a first distance and an extended position wherein the rearward end is spaced from the ferrule body by a distance which is greater than the first distance,”**

Vandewater discloses: “Upon impact with an object such as an animal, first blade 212 and second blade 213, responding to forces exerted on first opening lever 224 and second opening lever 225, respectively, pivot to a deployed position (FIG. 8), thereby forming a broad cutting blade for promoting an increased rate of bleeding and a more humane kill. Further, when in the deployed position, the interlocked blades may pivot about pivot point 234 relative to the arrowhead body, such as in a similar manner as described above.” (Exs. 1003, 7:45-54; 1019, ¶¶91, 97). Vandewater discloses: “The similar components are referenced in FIGS. 7-12 and 15-20 with like reference numbers, but with the reference numbers of FIGS. 15-20 having 100 added thereto.” (*Id.*, 8:49-52).

Figures 7-11 and 15-30 in Vandewater show that the space between the first blade member and the ferrule body is greater when the first blade member is in an extended position. (Exs. 1003, Figs. 15 and 16; 1019, ¶98). Annotated versions of Figures 15 and 16, taken from the Declaration of Dr. Kuhn²¹, are shown below.

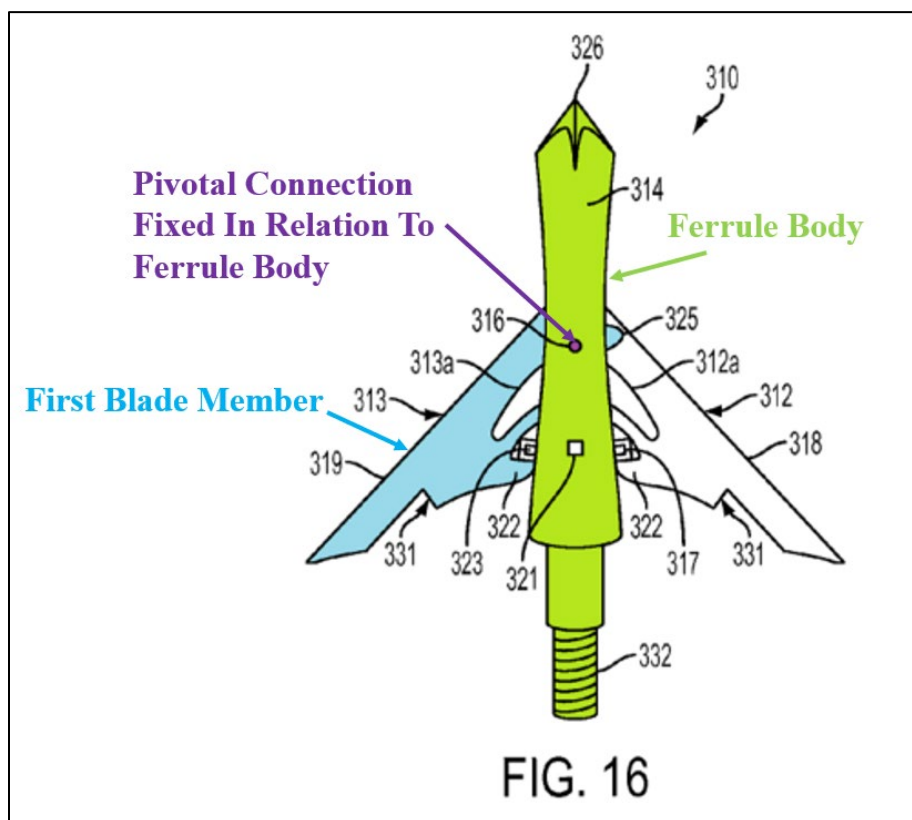
²¹ (Ex. 1019, ¶98).



5. “the pivotal interconnection between the first blade member and the ferrule body being at a fixed position relative to the ferrule body;”

Figures 7-11 and 15-20 in Vandewater, for example, disclose that the pivotal interconnection between the first blade member and the ferrule body is at a fixed position relative to the ferrule body. (Exs. 1003, Figs. 7-11 and 15-20; 1019, ¶¶91, 99). Annotated version of Figure 16, taken from the Declaration of Dr. Kuhn²², is shown below.

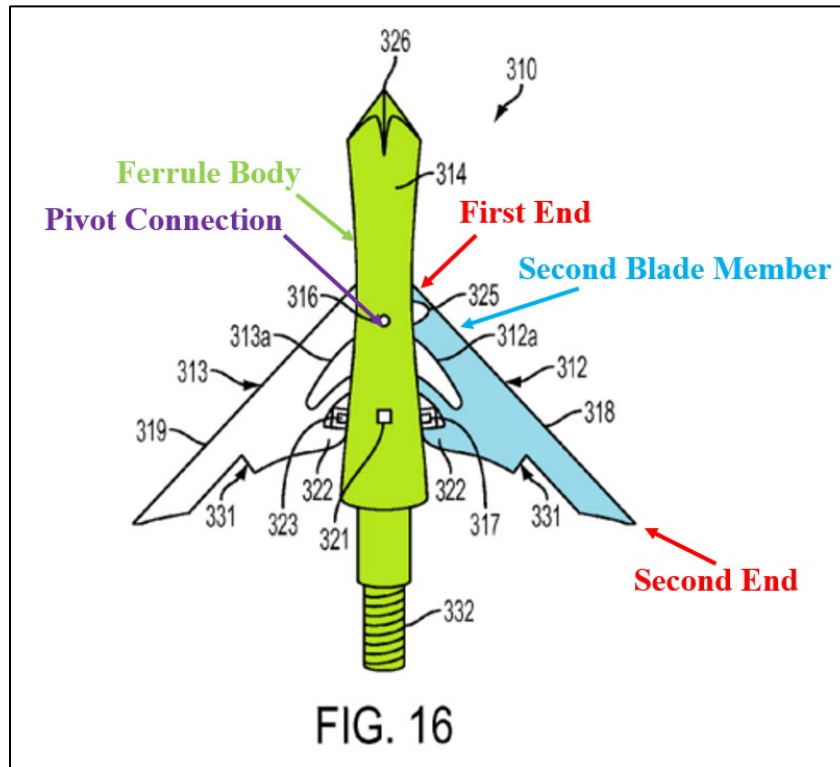
²² (Ex. 1019, ¶¶99).



6. “a second blade member having a forward end pivotally interconnected with the ferrule body and an opposite rearward end,”

Vandewater discloses: “The pivot connection between blades 212 and 213 and body 214 allows the blades to fold or deploy and to pivot after deployment . . .” (Exs. 1003, 7:33-35; 1019, ¶¶91, 100). Figures 7-11 and 15-20 in Vandewater, for example, disclose that the second blade member has a forward end and an opposite rearward end. (Exs. 1003, Fig. 16; 1019, ¶100). An annotated version of Figure 16, taken from the Declaration of Dr. Kuhn²³, is shown below.

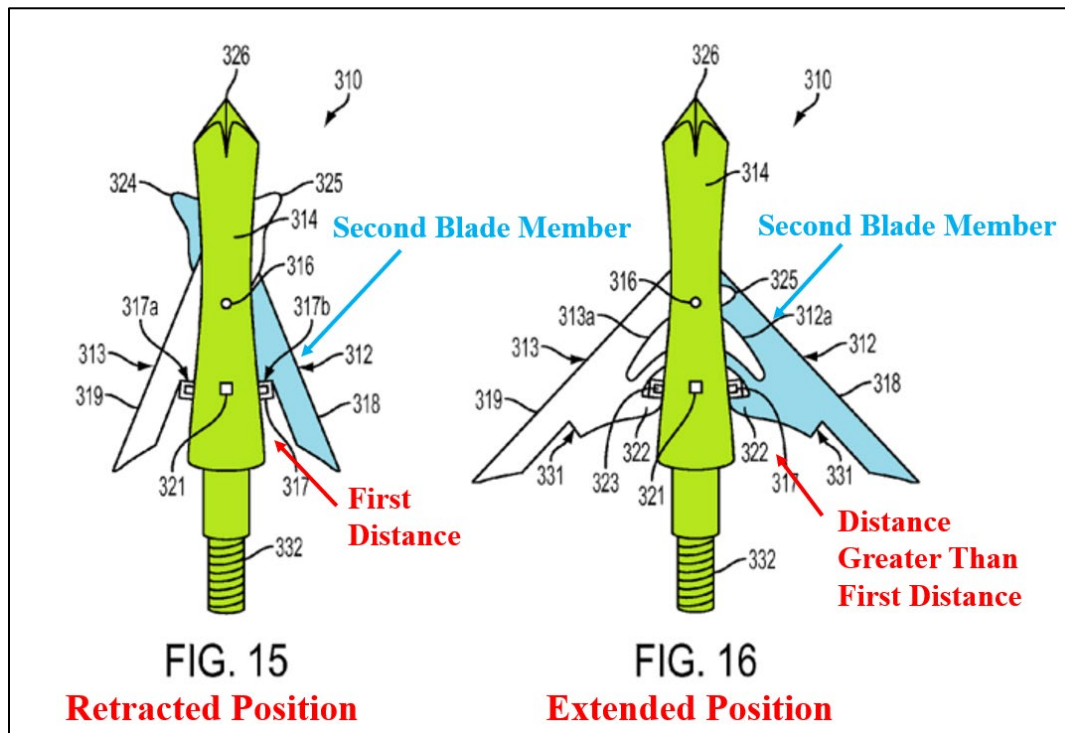
²³ (Ex. 1019, ¶100).



7. **“the second blade member having a retracted position wherein the rearward end is spaced from the ferrule body at a first distance and an extended position wherein the rearward end is spaced from the ferrule body by a distance which is greater than the first distance,”**

Vandewater discloses: “The pivot connection between blades 212 and 213 and body 214 allows the blades to fold or deploy and to pivot after deployment, and may be made with a set screw or other threaded connector or the like. Alternatively, the pivot connection may be established with an interference-fit pin, cotter pin, or other such device, as will be apparent to the skilled artisan.” (Exs. 1003, 7:33-39; 1019, ¶¶91, 101).

Figures 7-11 and 15-20 in Vandewater show that the space between the second blade member and the ferrule body is greater when the second blade member is in an extended position. (Exs. 1003, Figs. 7-11 and 15-20; 1019, ¶102). Annotated versions of Figures 15 and 16, taken from the Declaration of Dr. Kuhn²⁴, are shown below.

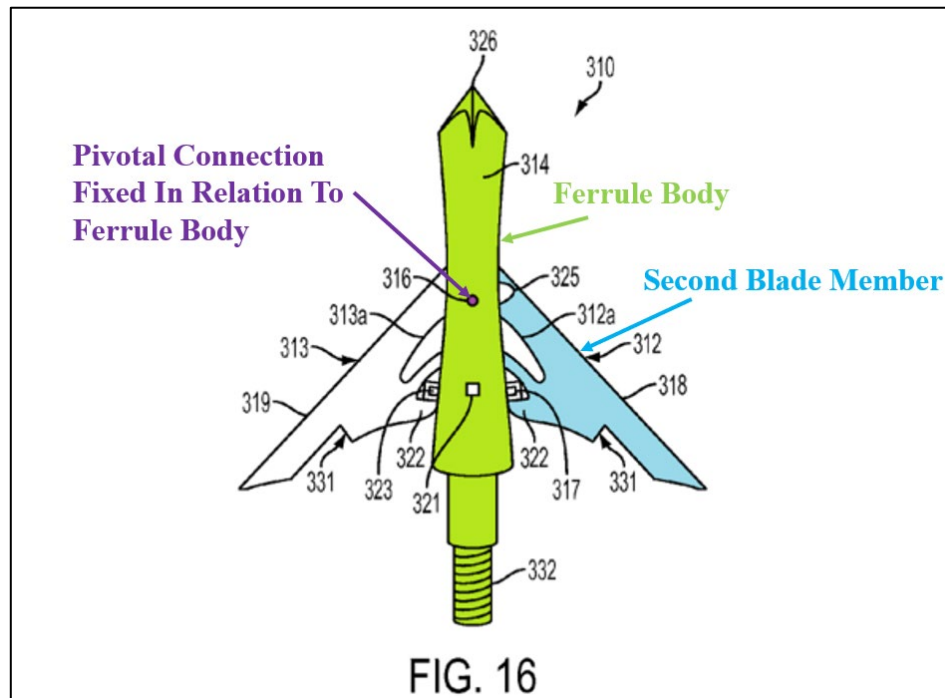


- 8. “the pivotal interconnection between the second blade member and the ferrule body being at a fixed position relative to the ferrule body; and”**

Figures 7-11 and 15-20 in Vandewater, for example, disclose that the pivotal interconnection between the second blade member and the ferrule body is at a fixed

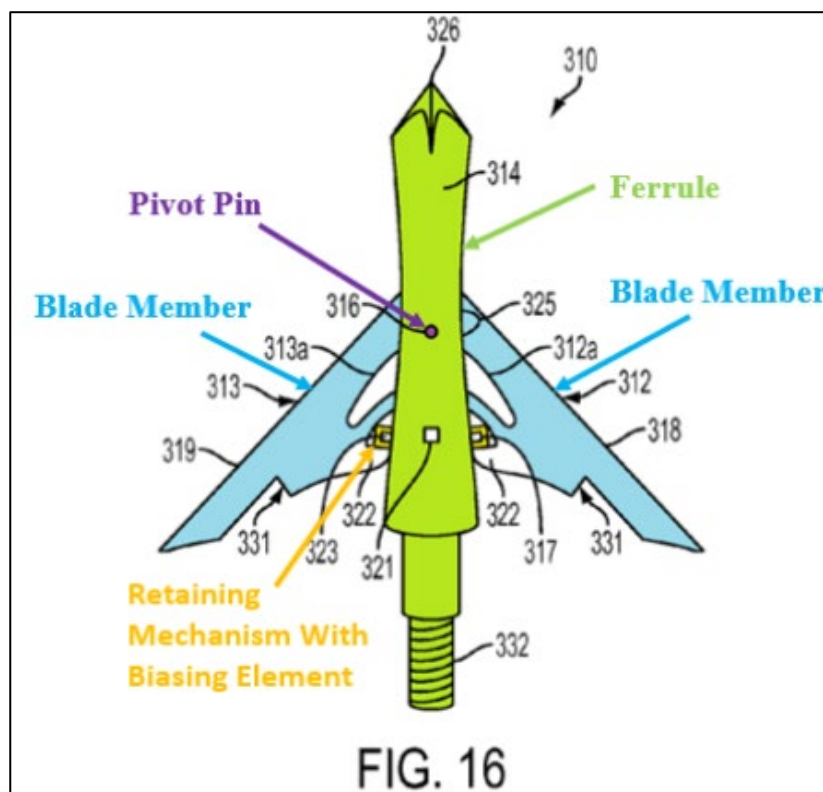
²⁴ (Ex. 1019, ¶102).

position relative to the ferrule body. (Exs. 1003, Figs. 15 and 16; 1019, ¶¶91, 103).



Vandewater discloses: “Optionally, a retaining mechanism (not shown in FIGS. 7-12) may also be utilized with arrowhead 210, such as a biasing element with a ball bearing or a spring wheel in accordance with retaining mechanisms disclosed herein . . . the retaining mechanism may retain the blades in a centered position when in their deployed position. Thus, such a retaining mechanism could act to retain the blades in a centered deployed position until one blade encounters a material harder

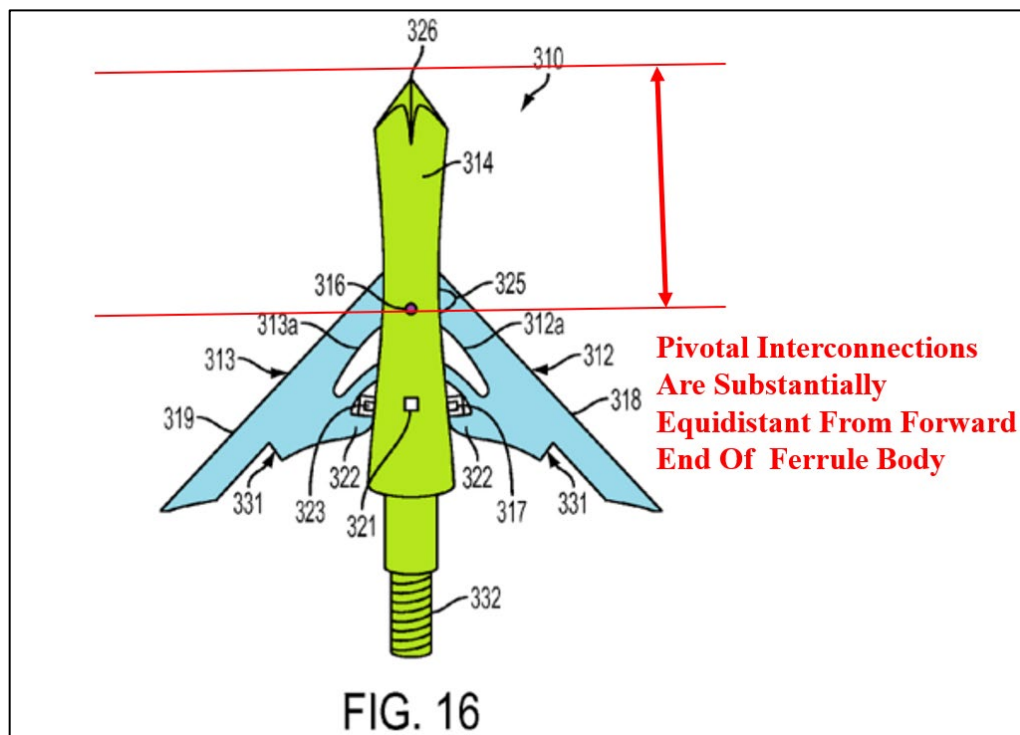
than the other blade encounters, as described in detail above.” (Exs. 1003, 7:55-8:2; 1019, ¶¶91, 104). Vandewater also discloses: “Biasing element 36 may comprise any suitable element or material for urging ball bearing 34 toward notch 24, such as, for example, a conventional spring-steel compression spring, or an elastomeric material such as rubber or the like.” (Exs. 1003, 3:63-66; 1019, ¶¶91, 104). An annotated version of Figure 16, taken from the Declaration of Dr. Kuhn²⁶, is shown below.



²⁶ (Ex. 1019, ¶104).

B. Dependent Claim 12

Dependent claim 12 depends from claim 11 and adds “wherein: the pivotal interconnection between the first blade member and the ferrule body and the pivotal interconnection between the second blade member and the ferrule body are substantially equidistant from the forward end of the ferrule.” As shown in Figure 16 in Vandewater, the pivotal interconnections between the first blade member and the ferrule body and between the second blade member and the ferrule body are substantially equidistant from the forward end of the ferrule. (Exs. 1003, Fig. 16; 1019, ¶¶91, 105). An annotated version of Figure 16, taken from the Declaration of Dr. Kuhn²⁷, is shown below.



²⁷ (Ex. 1019, ¶105).

C. Dependent Claim 15

Dependent claim 15 depends from claim 11 and adds “a retaining element engaging the blade members to maintain the blade members in the retracted position.” Vandewater discloses: “The retaining mechanism may retain the blades in their folded or aligned positions to provide a straighter flight” (Exs. 1003, 7:62-64; 1019, ¶¶91, 106).

D. Dependent Claim 17

Dependent claim 17 depends from claim 11 and adds “wherein: the biasing member is a coil spring.” Vandewater discloses: “Biasing element 36 may comprise any suitable element or material . . . such as, for example, a conventional spring-steel compression spring, or an elastomeric material such as rubber or the like.” (Exs. 1003, 3:63-66; 1019, ¶¶91, 107).

IX. CLAIM-BY-CLAIM EXPLANATION OF GROUND 3 FOR UNPATENTABILITY OF CLAIMS 1-4, 7, 9, 11, 12, 15, AND 17

Pursuant to Rule 42.104(b)(4)-(5), the specific grounds discussed below and in the Declaration of Dr. Kuhn demonstrate that the challenged claims are invalid because they are obvious over Lint alone or Lint in view of either Minisini or Krieger.

A. Independent Claim 1

The preamble to claim 1 recites “A broadhead for an arrow having a shaft, the broadhead comprising” To the extent the preamble is limiting, as discussed

above in Section VII.A, Lint discloses this claim requirement. (Exs. 1002, 2:29-38; 1019, ¶¶108, 110).

1. **“a ferrule having a rearward end configured for attachment to the shaft and an opposite forward end with a ferrule body extending therebetween;”**

As discussed above in Section VII.A.1., Lint discloses this claim requirement. (Exs. 1002, 2:29-38 and Fig. 1; 1019, ¶¶108, 111).

2. **“a first blade member having a first end pivotally interconnected with the ferrule body and an opposite second end,”**

As discussed in above in Section VII.A.2., Lint discloses this claim requirement. (Exs. 1002, 2:39-45 and Fig. 2; 1019, ¶¶108, 112). To the extent Patent Owner contends that the “first blade member” requires a sharp edge, Patent Owner is wrong because the plain and ordinary language of the claim does not require any such requirement.

Even if the plain and ordinary language of the claim requires a sharp edge, a PHOSITA would understand that the barbs in Lint encompassed both sharp and non-sharp edges. (Ex. 1019, ¶¶114-119). The use of sharp edges on expandable barbs, or blade members, has been a well-known technique for decades. (*Id.*, ¶¶115, 118). The use of a sharp edge on Lint’s barbs was a simple matter of design choice from a limited number of options in order to optimize the design. (*Id.*, ¶¶118-119). Thus, Lint discloses a first blade member with a sharp edge to one of ordinary skill. *In re*

Applied Materials, Inc., 692 F.3d 1289, 1298-99 (Fed. Cir. 2012) (“A reference must be considered for everything that it teaches...”); *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 421, 127 S.Ct. 1727 (2007). (“When there is a design need or market pressure to solve a problem and there are a finite number of identified, predictable solutions, a person of ordinary skill has good reason to pursue the known options within his or her technical grasp. If this leads to the anticipated success, it is likely the product not of innovation but of ordinary skill and common sense.”); *In re Burckel*, 592 F.2d 1175, 1179 (CCPA 1979); *In re Lamberti*, 545 F.2d 747, 750 (CCPA 1976)(“[T]he question under 35 U.S.C. [§] 103 is not merely what the references expressly teach, but what they would have suggested to one of ordinary skill in the art at the time the invention was made.”); *Merck & Co. v. Biocraft Labs., Inc.*, 874 F.2d 804, 807 (Fed. Cir. 1989); *ACCO Brands Corp. v. Fellowes, Inc.*, 813 F.3d 1361, 1367 (Fed. Cir. 2016); *Wyers v. Master Lock Co.*, 616 F.3d 1231, 1238 (Fed. Cir. 2010).

Moreover, to the extent it is argued that there is a distinguishable difference between the disclosure of Lint and the “first blade member,” any such difference is insufficient to render the claims non-obvious. (Ex. 1019, ¶¶118, 162-163). “[T]he mere existence of differences between the prior art and an invention does not establish the invention’s nonobviousness.” *Dann v. Johnston*, 425 U.S. 219, 230 (1976). Rather, a PHOSITA would deem any such difference obvious because “the

relatively small logical gap between the prior art and the claim in this case is closed by a person of ordinary skill in the art pursuing known options within his or her technical grasp.” *Scanner Techs. Corp. v. ICOS Vision Sys. Corp. N.V.*, 528 F.3d 1365, 1382 (Fed. Cir. 2008) (quotations omitted).

Even if Lint’s barbs were found not to encompass sharp edges to a PHOSITA, it would have been obvious to a PHOSITA to simply to add a sharp edge to the first blade member disclosed in Lint because a PHOSITA would know that sharp edges facilitate cutting flesh, improve the flight characteristics of broadheads, and better allow the broadhead to penetrate a target. (Ex. 1019, ¶¶114-116). For example, like Lint, Minisini is directed toward “arrows and more particularly to an arrow especially designed for shooting fish, but which is adaptable for other uses.” (Ex. 1005, 1:15-17). Minisini discloses an “arrowhead H includes a ferrule 12 having an internal socket 13 into which is fitted the forward end of the arrow shaft.” (*Id.*, 2:10-12). The ferrule contains a barb with “its forward end rockably mounted on a pivot pin 21” (*Id.*, 2:27-29). Minisini discloses that the “barb preferably has its outer longitudinal edge sharpened to cut through a fish” (*Id.*, 2:31-34). Similarly, Krieger is directed to “arrows and more particularly to arrowheads.” (Ex. 1006, 1:1-2). Krieger discloses that “[t]o reduce air friction the longitudinal edges of the wings or blades are sharpened to knife edges.” (*Id.*, 2:10-12).

Thus, it would have been obvious to a person of ordinary skill in the art to simply add a sharp edge as taught by either Minisini or Krieger to the first blade member disclosed in Lint. (Ex. 1019, ¶¶114-118). Both Lint, Minisini, and Krieger are in the same field of endeavor. (*Id.*, ¶¶118, 162-163). The use of sharp edges on expandable barbs, or blade members, has been a well-known technique for decades. (*Id.*).

The resulting combination is nothing more than combining elements that were known in the prior art, making no change to their respective functions to achieve resulting combination that yields nothing more than results which would have been predictable to a person of ordinary skill in the art. (*Id.*, ¶¶118-119, 162-163).

3. **“the first blade member having a retracted position wherein the second end is spaced from the ferrule body at a first distance and an extended position wherein the second end is spaced from the ferrule body by a distance which is greater than the first distance;”**

As discussed above in Section VII.A.3., Lint discloses this claim requirement. (Exs. 1002, 2:45-48, 2:64-67, Figs. 2 and 3; 1019, ¶¶108, 120).

4. **“a second blade member having a first end pivotally interconnected with the ferrule body and an opposite second end,”**

As discussed above in Section VII.A.4., Lint discloses this claim requirement. (Exs. 1002, 2:39-45 and Fig. 2; 1019, ¶¶108, 121). Also, as discussed above, to the extent Patent Owner contends that the “second blade member” requires a sharp edge,

Patent Owner is wrong because the plain and ordinary language of the claim does not require any such requirement. Nevertheless, as discussed above, it would have been obvious to a PHOSITA to simply add a sharp edge as taught by either Minisini or Krieger to the second blade member disclosed in Lint. (Ex. 1019, ¶¶114-119, 123-128, 162-163).

5. **“the [second] blade member having a retracted position wherein the second end is spaced from the ferrule body at a first distance and an extended position wherein the second end is spaced from the ferrule body by a distance which is greater than the first distance; and”**

As discussed in above in Section VII.A.5., Lint discloses this claim requirement. (Exs. 1002, 2:45-48, 2:64-67, Figs. 2 and 3; 1019, ¶¶108, 129).

6. **“at least one biasing member biasing the first and second blade members towards the extended positions, the biasing member being the only element operable to hold the blade members in the extended position.”**

As discussed in above in Section VII.A.6., Lint discloses this claim requirement. (Exs. 1002, 2:53-58 and Fig. 2; 1019, ¶¶108, 130).

B. Dependent Claim 2

Dependent claim 2 depends from claim 1 and adds “wherein: the pivotal interconnection between the first blade member and the ferrule body is at a fixed position relative to the ferrule body; and the pivotal interconnection between the second blade member and the ferrule body being at a fixed position relative to the

ferrule body.” As discussed in above in Section VII.B., Lint discloses this claim requirement. (Exs. 1002, Figs. 2 and 3; 1019, ¶¶108, 131).

C. Dependent Claim 3

Dependent claim 3 depends from claim 2 and adds “wherein: the pivotal interconnection between the first blade member and the ferrule body and the pivotal interconnection between the second blade member and the ferrule body are substantially equidistant from the forward end of the ferrule.” As discussed in above in Section VII.C., Lint discloses this claim requirement. (Exs. 1002, Fig. 2; 1019, ¶¶108, 132).

D. Dependent Claim 4

Dependent claim 4 depends from claim 1 and adds “wherein: the first ends of the first and second blade members are forward ends and the second ends are rearward ends.” As discussed in above in Section VII.D., Lint discloses this claim requirement. (Exs. 1002, 2:42-50; 1019, ¶¶108, 133).

E. Dependent Claim 7

Dependent claim 7 depends from claim 1 and adds “a retaining element engaging the blade members to maintain the blade members in the retracted position.” As discussed in above in Section VII.E., Lint discloses this claim requirement. (Exs. 1002, 2:70-3:4; 1019, ¶¶108, 134).

F. Dependent Claim 9

As discussed in above in Section VII.F., Lint discloses this claim requirement. (Exs. 1002, 2:53-58 and Fig. 2; 1019, ¶¶108, 135).

G. Independent Claim 11

The preamble to claim 1 recites: “A broadhead for an arrow having a shaft, the broadhead comprising: . . .” As discussed in above in Section VII.G., to the extent the preamble is limiting, Lint discloses this claim requirement. (Exs. 1002, 2:29-38; 1019, ¶¶108, 136).

- 1. “a ferrule having a rearward end configured for attachment to the shaft and an opposite forward end with a ferrule body extending therebetween,”**

As discussed in above in Section VII.G.1, Lint discloses this claim requirement. (Exs. 1002, 2:29-38 and Fig. 1; 1019, ¶¶108, 137).

- 2. “the forward end of the ferrule defining the forward tip of the arrow and being fixed with respect to the ferrule body;”**

As discussed in above in Section VII.G.2, Lint discloses this claim requirement. (Exs. 1002, 2:29-34; 1019, ¶¶108, 138).

- 3. “a first blade member having a forward end pivotally interconnected with the ferrule body and an opposite rearward end,”**

As discussed in above in Section VII.G.3, Lint alone discloses this claim requirement. (Exs. 1002, 2:39-45 and Fig. 2; 1019, ¶¶108, 139). To the extent Patent Owner contends that the “first blade member” requires a sharp edge, Patent Owner

is wrong because the plain and ordinary language of the claim does not require any such requirement. (Ex. 1019, ¶¶140-141). Even if such a requirement were present in the claim's plain and ordinary meaning, it would have been obvious to a PHOSITA in view of Lint alone or in combination with Minisini or Kreger for the same reasons discussed above in Section VII.G.3. (*Id.*, ¶¶142-146).

4. **“the first blade member having a retracted position wherein the rearward end is spaced from the ferrule body at a first distance and an extended position wherein the rearward end is spaced from the ferrule body by a distance which is greater than the first distance,”**

As discussed in above in Section VII.G.4, Lint discloses this claim requirement. (Exs. 1002, 2:45-48, Figs. 2 and 3; 1019, ¶¶108, 147).

5. **“the pivotal interconnection between the first blade member and the ferrule body being at a fixed position relative to the ferrule body;”**

As discussed in above in Section VII.G.5, Lint discloses this claim requirement. (Exs. 1002, 2:43-45, Figs. 2 and 3; 1019, ¶¶108, 148).

6. **“a second blade member having a forward end pivotally interconnected with the ferrule body and an opposite rearward end,”**

As discussed in above in Section VII.G.6, Lint alone discloses this claim requirement. (Exs. 1002, 2:43-45 and Fig. 2; 1019, ¶¶108, 149). To the extent Patent Owner contends that the “second blade member” requires a sharp edge, Patent Owner is wrong because the plain and ordinary language of the claim does not require any such requirement. (Ex. 1019, ¶150). Even if such a requirement were

present in the claim's plain and ordinary meaning, it would have been obvious to a PHOSITA in view of Lint alone or in combination with Minisini or Kreger for the same reasons discussed above in Section VII.G.6. (*Id.*, ¶¶150-155, 162-163).

7. **“the second blade member having a retracted position wherein the rearward end is spaced from the ferrule body at a first distance and an extended position wherein the rearward end is spaced from the ferrule body by a distance which is greater than the first distance,”**

As discussed in above in Section VII.G.7, Lint discloses this claim requirement. (Exs. 1002, 2:45-48, Figs. 2 and 3; 1019, ¶¶108, 156).

8. **“the pivotal interconnection between the second blade member and the ferrule body being at a fixed position relative to the ferrule body; and”**

As discussed in above in Section VII.G.8., Lint discloses this claim requirement. (Exs. 1002, 2:43-45, Figs. 2 and 3; 1019, ¶¶108, 157).

9. **“at least one biasing member biasing the first and second blade members towards the extended positions.”**

As discussed in above in Section VII.G.9, Lint discloses this claim requirement. (Exs. 1002, 2:53-58 and Fig. 2; 1019, ¶¶108, 158).

H. Dependent Claim 12

As discussed in above in Section VII.H, Lint discloses this claim requirement. (Exs. 1002, Fig. 2; 1019, ¶¶108, 159).

I. Dependent Claim 15

As discussed in above in Section VII.I, Lint discloses this claim requirement. (Exs. 1002, 2:70-3:4; 1019, ¶¶108, 160).

J. Dependent Claim 17

As discussed in above in Section VII.J, Lint discloses this claim requirement. (Exs. 1002, 2:53-58 and Fig. 2; 1019, ¶¶108, 161).

X. CLAIM-BY-CLAIM EXPLANATION OF GROUND 4 FOR UNPATENTABILITY OF CLAIMS 11, 12, 15, AND 17

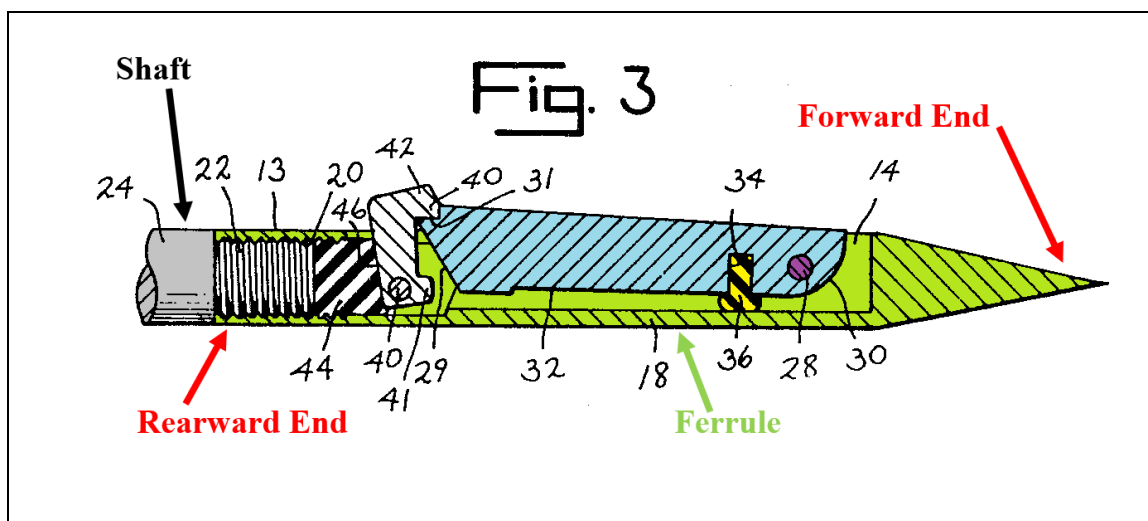
Pursuant to Rule 42.104(b)(4)-(5), the specific grounds discussed below and in the Declaration of Dr. Kuhn demonstrate that the challenged claims are invalid because they are obvious over Hendricks alone or Hendricks in combination with the knowledge of a PHOSITA.

A. Independent Claim 11

The preamble to claim 11 recites: “A broadhead for an arrow having a shaft, the broadhead comprising:” Hendricks discloses: “A head for a spear or like weapon having a tip section and a body section” (Exs. 1013, Abstract; 1019, ¶¶164, 166). Hendricks further discloses that the body section “is internally threaded so as to receive the threaded reduced forward end portion 22 of a weapon shaft 24.” (*Id.*, 2:5-7; Ex. 1019, ¶¶164, 166).

1. “a ferrule having a rearward end configured for attachment to the shaft and an opposite forward end with a ferrule body extending therebetween,”

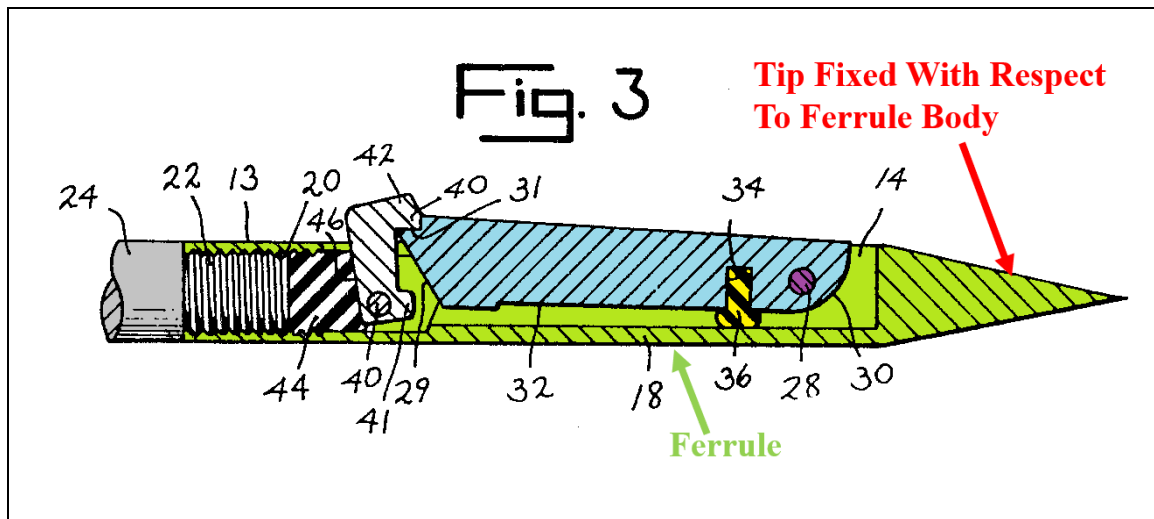
Hendricks discloses: “The weapon head illustrated in FIGS. 1-4 include the tip section which is preferably conical and a body section 12 which is preferably cylindrical and which extends rearwardly from tip 10. Body section 12 of the weapon head has a longitudinal slot 14 formed therein, slot 14 is defined in part by spaced side parts 16 and an interconnecting base part 18. The rear end portion 13 of body section 12 preferably has an axial bore 20 formed therein which communicates with longitudinal slot 14 in body 12 and which is internally threaded so as to receive the threaded reduced forward end portion 22 of a weapon shaft 24.” (Exs. 1013, 1:72-2:7; 1019, ¶¶164, 167). An annotated version of Figure 3 in Hendricks, taken from the Declaration of Dr. Kuhn²⁸, is below.



²⁸ (Ex. 1019, ¶167).

2. “the forward end of the ferrule defining the forward tip of the arrow and being fixed with respect to the ferrule body;”

Hendricks discloses: “The weapon head illustrated in FIGS. 1-4 include the tip section which is preferably conical and a body section 12 which is preferably cylindrical and which extends rearwardly from tip 10.” (Exs. 1013, 1:72-75; 1019, ¶¶164, 168). Figure 3 of Hendricks shows that the tip 10 is fixed in relation to the ferrule body. (Ex. 1019, ¶168). An annotated version of Figure 3 of Hendricks, taken from the Declaration of Dr. Kuhn²⁹, is below.

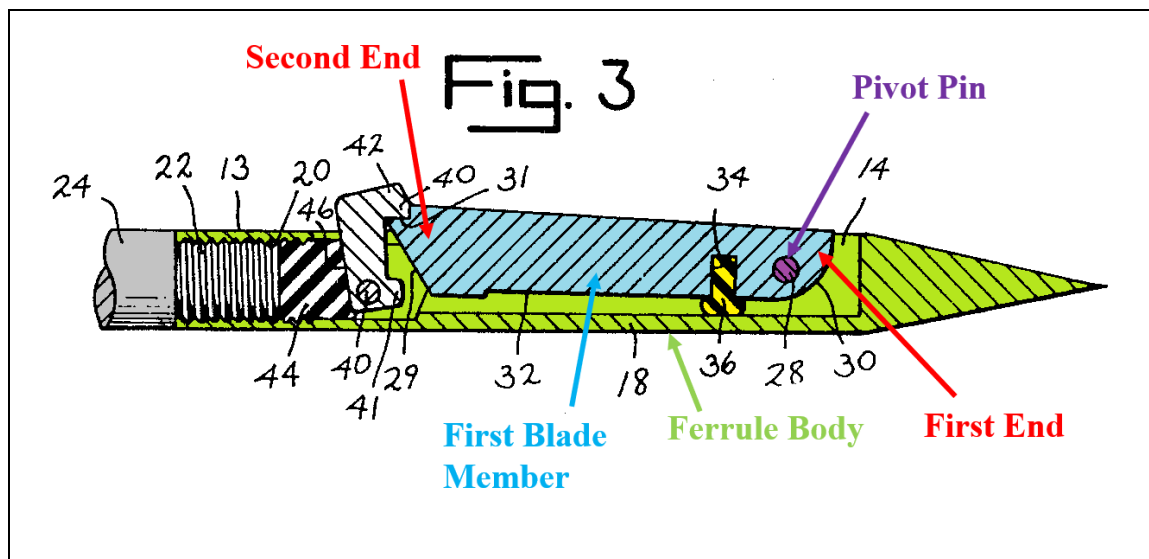


3. “a first blade member having a forward end pivotally interconnected with the ferrule body and an opposite rearward end,”

Figure 3 of Hendricks, for example, shows the first blade member having a forward end pivotally interconnected with the ferrule body and an opposite rearward

²⁹ (Ex. 1019, ¶168).

end. (Exs. 1013, 2:7-12, Fig. 3; 1019, ¶¶164, 169). An annotated version of Figure 3 of Hendricks, taken from the Declaration of Dr. Kuhn³⁰, is below.

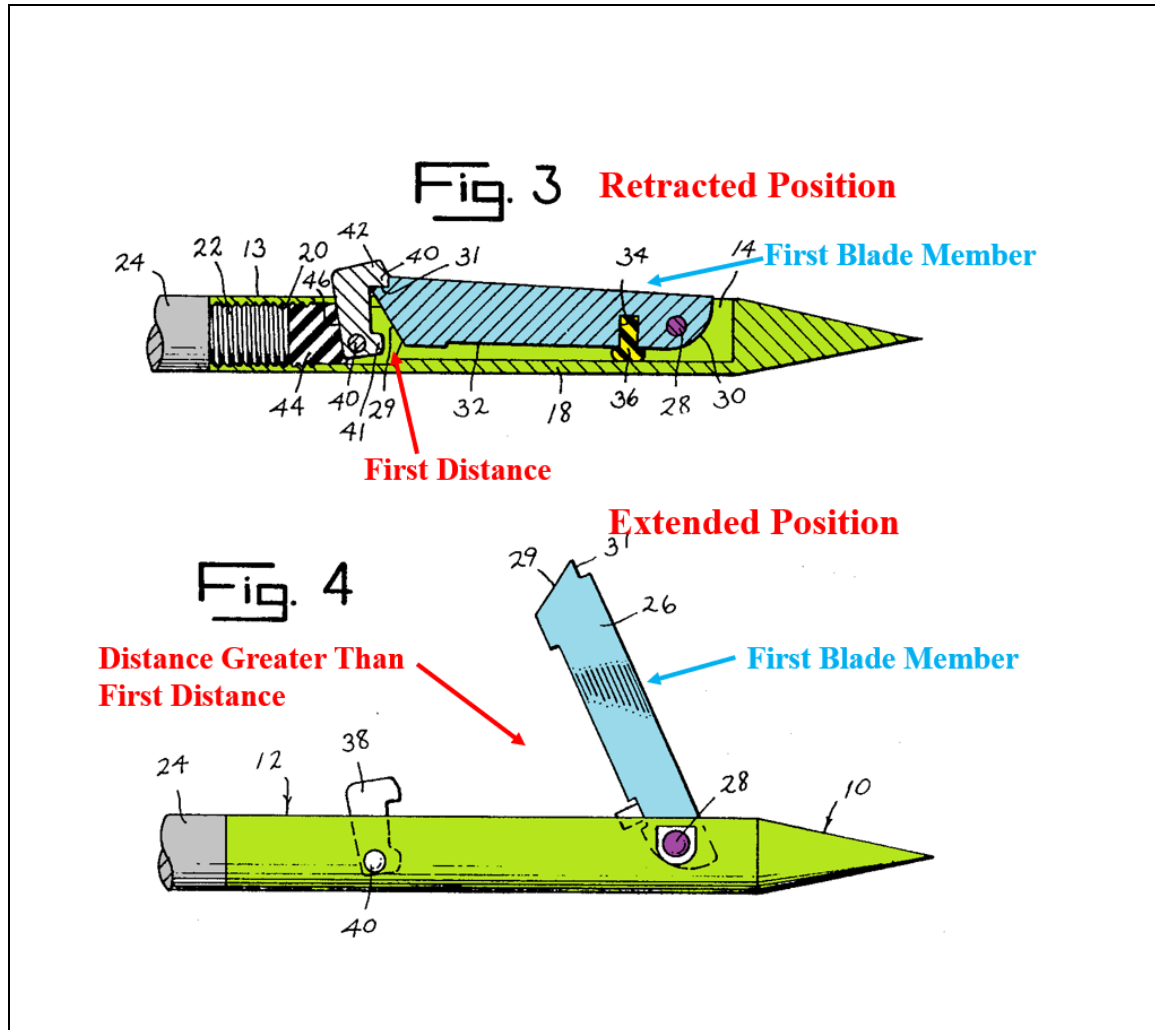


4. “the first blade member having a retracted position wherein the rearward end is spaced from the ferrule body at a first distance and an extended position wherein the rearward end is spaced from the ferrule body by a distance which is greater than the first distance,”

Hendricks discloses: “Barb 26 is swingable about its pivot connection between a closed position in which it is substantially entirely received within slot 14, as shown in FIG. 1, and an open position in which its free end projects laterally outwardly of the body 12, as shown in FIG. 4.” (Exs. 1013, 2:12-16; 1019, ¶¶164, 170). Figures 3 and 4 in Hendricks show that the space between the first blade member and the ferrule body is greater when the first blade member is in an extended

³⁰ (Ex. 1019, ¶169).

position. (Ex. 1019, ¶171). Annotated versions of Figures 3 and 4, taken from the Declaration of Dr. Kuhn³¹, are below.

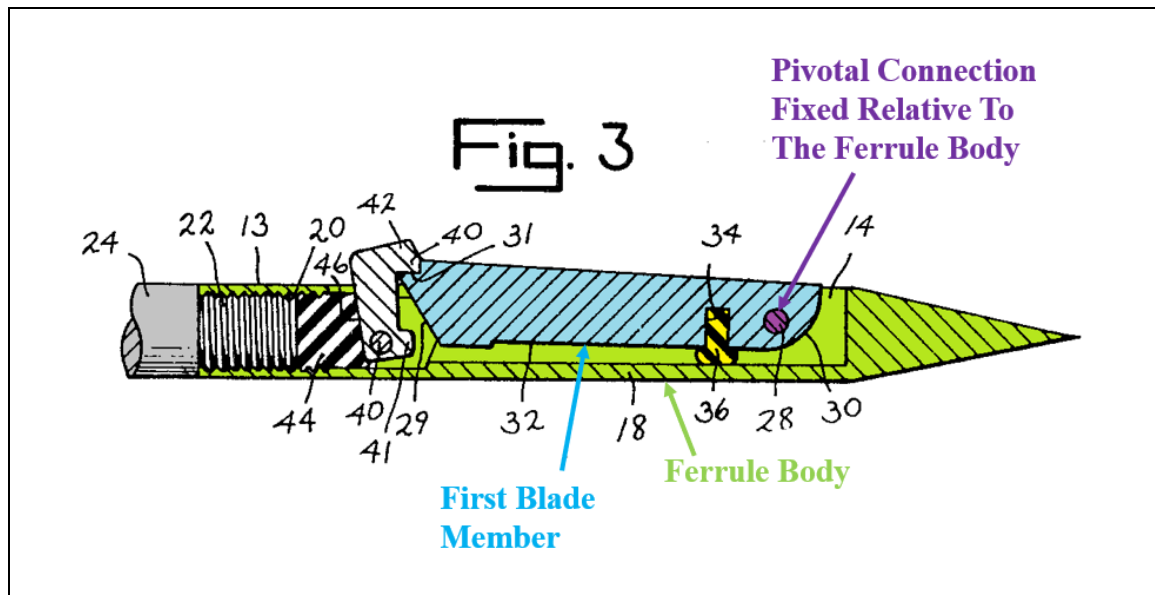


5. “the pivotal interconnection between the first blade member and the ferrule body being at a fixed position relative to the ferrule body;”

Figure 3 in Hendricks, for example, discloses that the pivotal interconnection between the first blade member and the ferrule body is at a fixed position relative to

³¹ (Ex. 1019, ¶171).

the ferrule body. (Exs. 1013, Fig. 3; 1019, ¶172). An annotated version of Figure 3 of Hendricks, taken from the Declaration of Dr. Kuhn³², is below.



6. “a second blade member having a forward end pivotally interconnected with the ferrule body and an opposite rearward end,”

Although Hendricks expressly discloses a single blade member, adding a second blade member to the broadhead would have been obvious as a mere duplication of parts lacking unexpected results. *See In re Harza*, 274 F.2d 669, 671 (C.C.P.A. 1960) (The mere duplication of parts is obvious absent a new and unexpected result); *Dunbar v. Myers*, 94 U.S. 187, 195-200 (1876) (holding that the claim was invalid because any craftsmen in the field would know how to arrange a second plate on the one side in the same manner it is arranged in the opposite side

³² (Ex. 1019, ¶172).

and there was no skill or ingenuity involved); *see also Low Temp Indus., Inc. v. Duke Mfg. Co.*, No. 2021-2137, 2021 WL 6124455, at *5-6 (Fed. Cir. Dec. 28, 2021).

As explained by Dr. Kuhn, it would have been obvious for a PHOSITA to add a second blade member to the broadhead of Hendricks. (Ex. 1019, ¶173). Implementing two blades in broadheads similar to the broadhead disclosed in Hendricks was already routine. (*Id.*). A PHOSITA would understand that it would have been an obvious variation of Hendricks to add a second blade member to the broadhead. (*Id.*).

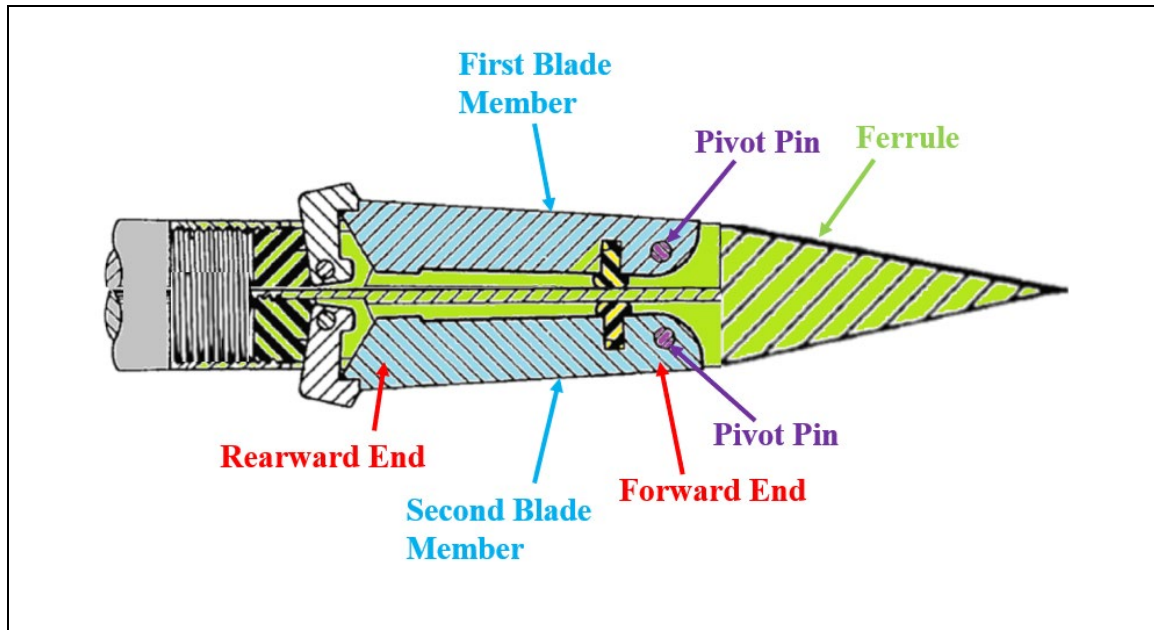
Moreover, a PHOSITA would be motivated to add a second blade member having the same function and configuration as the first blade member because it would be advantageous for several reasons. (*Id.*, ¶¶174-175). First, a PHOSITA would know that adding a second blade member would increase the cutting surface of the broadhead and thus make the broadhead more lethal. (*Id.*, ¶174). Second, a PHOSITA would know that adding a second blade member would improve the aerodynamics of the broadhead of Hendricks. (*Id.*, ¶175). A PHOSITA would know that for aerodynamic reasons, it is important to have an arrowhead that is balanced along a centerline axis of the ferrule. (*Id.*). Adding a second blade member to Hendricks would be preferred because it would evenly balance the arrowhead. (*Id.*).

A PHOSITA would know how to arrange a second blade member on the opposite side of the broadhead disclosed in Hendricks in the same manner that the

first blade member is arranged. (*Id.*, ¶176). Modifying the broadhead of Hendricks to include a second blade member would be simple and straightforward for a PHOSITA. (*Id.*). No skill or ingenuity would be required to construct such a broadhead given the teachings of Hendricks and the knowledge of a PHOSITA. (*Id.*). A PHOSITA would know how to design and make a broadhead with two blade members, and it is obvious that anyone knowing how to design and make a broadhead would know how to arrange a second blade member opposite the first blade member in the Hendricks broadhead. (*Id.*). A PHOSITA would know that adding a second blade member to the broadhead in Hendricks would have been predictable and would not result in a new or unexpected result. (*Id.*).

A modified and annotated version of Figure 3 of Hendricks, taken from the Declaration of Dr. Kuhn³³, is below. The Figure shows the broadhead having a second blade member with a forward end pivotally interconnected with the ferrule body and an opposite rearward end. (*Id.*, ¶177).

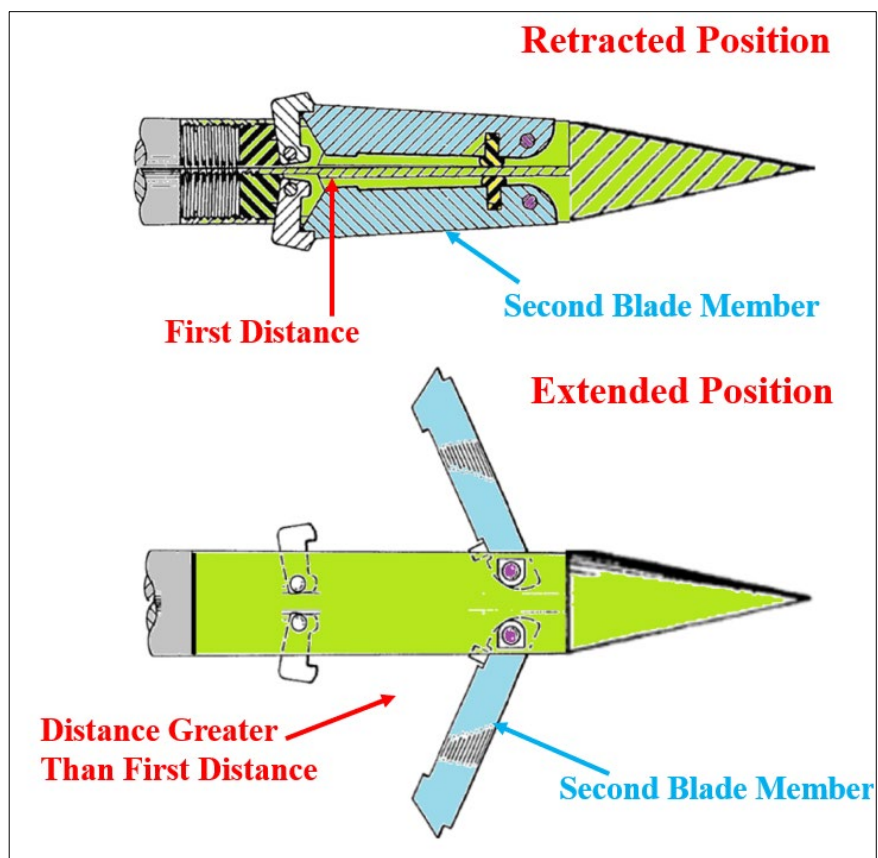
³³ (Ex. 1019, ¶177).



7. **“the second blade member having a retracted position wherein the rearward end is spaced from the ferrule body at a first distance and an extended position wherein the rearward end is spaced from the ferrule body by a distance which is greater than the first distance,”**

As explained above, it would have been obvious for a PHOSITA to add a second blade member to the broadhead disclosed in Hendricks. (Ex. 1019, ¶¶173-177). Modified and annotated versions of Figures 3 and 4 of Hendricks, taken from the Declaration of Dr. Kuhn³⁴, are below. The Figures show that the space between the second blade member and the ferrule body is greater when the second blade member is in an extended position. (*Id.*, ¶178).

³⁴ (Ex. 1019, ¶178).

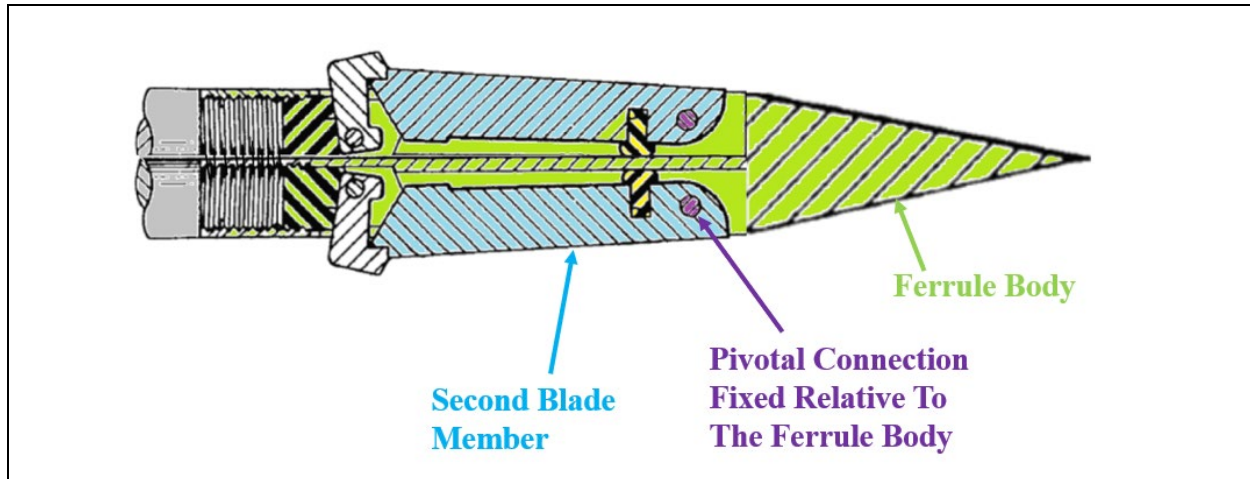


8. “the pivotal interconnection between the second blade member and the ferrule body being at a fixed position relative to the ferrule body; and”

As explained above, it would have been obvious for a PHOSITA to add a second blade member to the broadhead disclosed in Hendricks. (Ex. 1019, ¶¶173-177). A modified and annotated version of Figure 3 of Hendricks, taken from the Declaration of Dr. Kuhn³⁵, is shown below. The Figure shows that the pivotal

³⁵ (Ex. 1019, ¶179).

interconnection between the second blade member and the ferrule body is at a fixed position relative to the ferrule body. (*Id.*, ¶179).

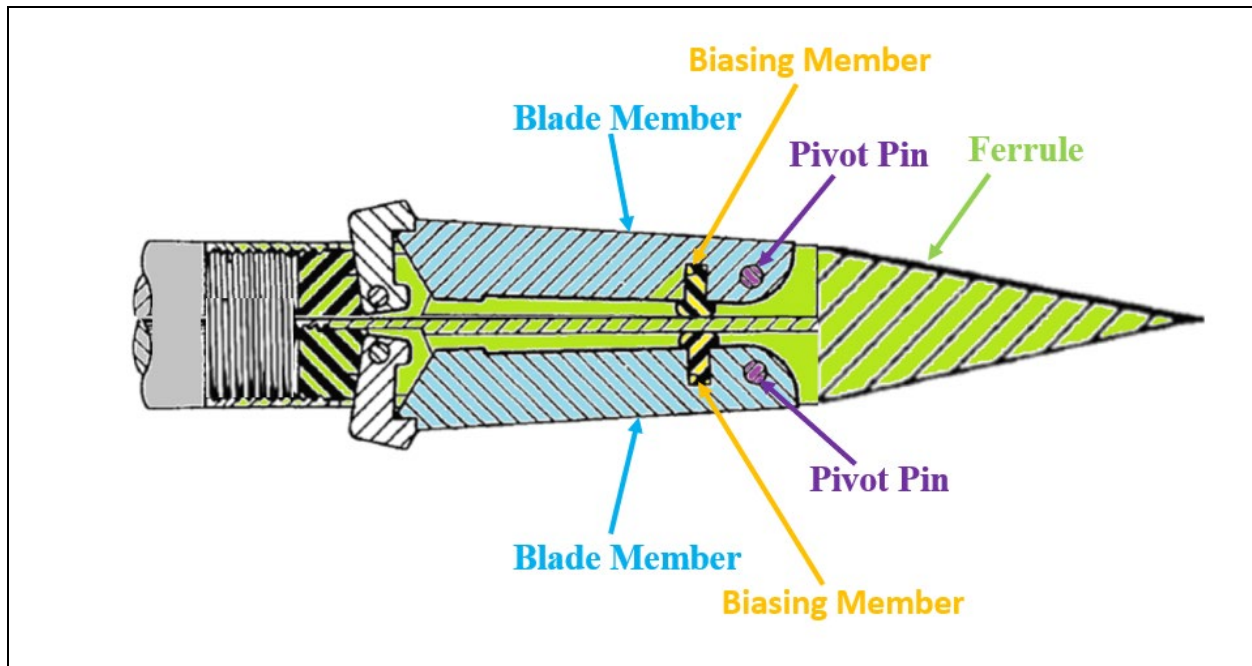


9. “at least one biasing member biasing the first and second blade members towards the extended positions.”

Hendricks discloses: “A resilient member 36, preferably of a rubber composition, is pressed into bore 34 and includes an end portion which projects beyond inner face 32 of barb 26 and which compressingly engages base part 18 of body section 12 when barb 26 is in its closed position.” (Exs. 1013, 2:26-31; 1019, ¶¶164, 180). Hendricks further discloses: “When the weapon head enters a target, projection 42 of catch 38 engages a portion of the target and is pivoted rearwardly with respect to body section 12 causing the disengagement of lip 40 of the catch from insert part 31 of the barb. Barb 26 is then forced outwardly from its closed position by resilient member 36.” (Exs. 1013, 3:1-6; 1019, ¶¶164, 180).

As explained above, it would have been obvious for a PHOSITA to add a second blade member to the broadhead disclosed in Hendricks. (Ex. 1019, ¶¶173-

177). A modified and annotated version of Figure 3 of Hendricks, taken from the Declaration of Dr. Kuhn³⁶, is below. The Figure shows that the resilient members bias the first and second blade members towards the extended positions. (*Id.*, ¶181).

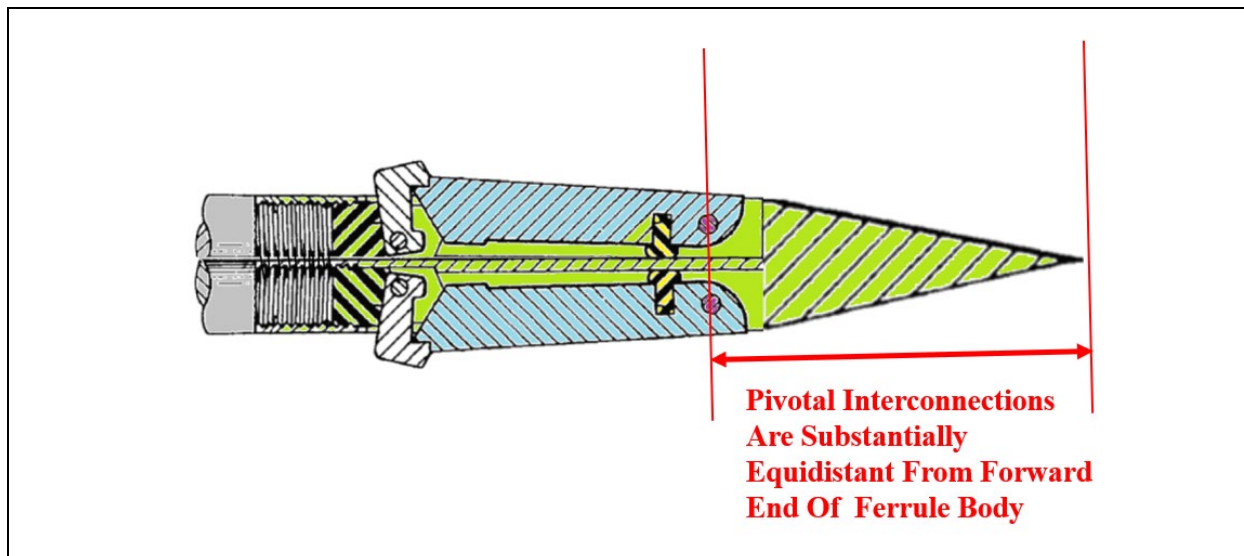


B. Dependent Claim 12

Dependent claim 12 depends on claim 11 and adds “wherein: the pivotal interconnection between the first blade member and the ferrule body and the pivotal interconnection between the second blade member and the ferrule body are substantially equidistant from the forward end of the ferrule.” For the same reasons explained above, it would have been obvious for a PHOSITA to add a second blade member to the broadhead disclosed in Hendricks. (Ex. 1019, ¶¶173-177). A

³⁶ (Ex. 1019, ¶181).

modified and annotated version of Figure 3 of Hendricks, taken from the Declaration of Dr. Kuhn³⁷, is below. The Figure shows that the pivotal interconnections between the blade members and the ferrule body are substantially equidistant from the forward end of the ferrule. (*Id.*, ¶182).



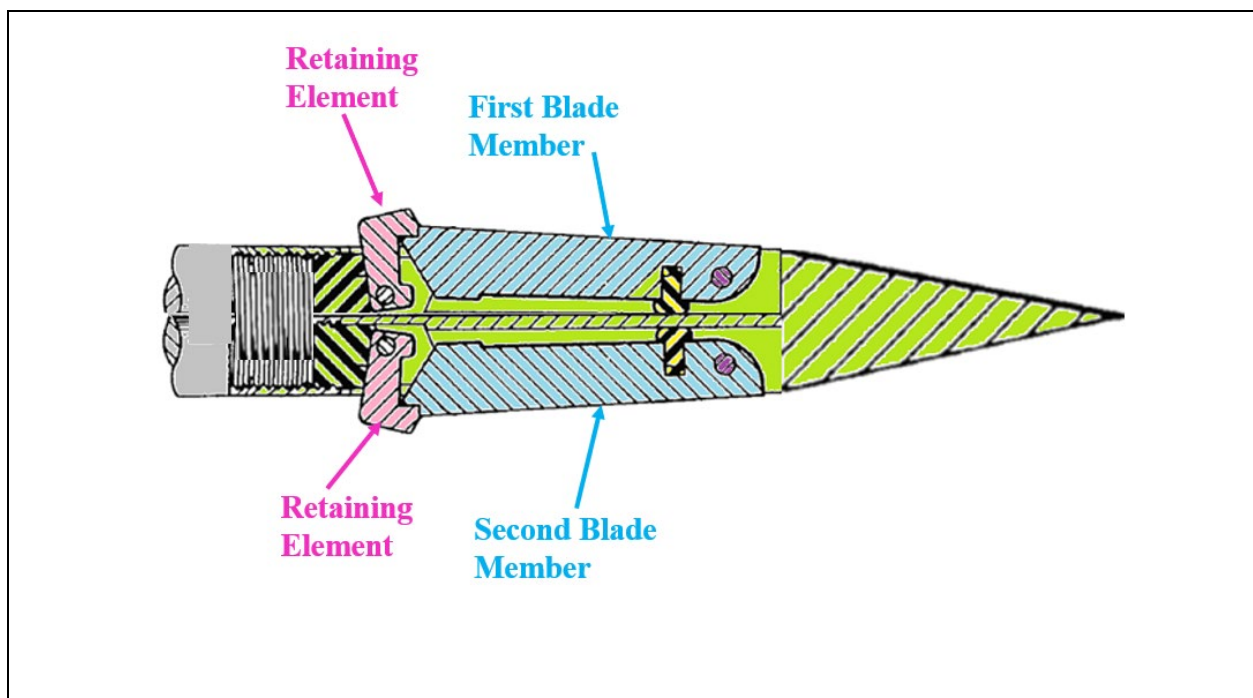
C. Dependent Claim 15

Dependent claim 15 depends on claim 11 and adds “a retaining element engaging the blade members to maintain the blade members in the retracted position.” Hendricks discloses: “A catch 38 is disposed within longitudinal slot 14 of body section 12 and is preferably positioned adjacently rearward of barb 26. Catch 38 is connected at one end to body section 12, preferably by a transverse pin 40, so as to be pivotal in a fore and aft direction within slot 14. The free end of catch 38

³⁷ (Ex. 1019, ¶182).

includes a lip 40 which is adapted to engage an inset part or shoulder 31 of barb outer side face 33 and retain barb 26 in its closed position.” (Exs. 1013, 2:35-44; 1019, ¶¶164, 183).

For the same reasons explained above, it would have been obvious for a PHOSITA to add a second blade member to the broadhead disclosed in Hendricks. (Ex. 1019, ¶¶173-177). A modified and annotated version of Figure 3 of Hendricks, taken from the Declaration of Dr. Kuhns³⁸, is below. The Figure shows that the catch, or retaining mechanism, on each blade member engages the blade members to maintain the blade members in the retracted position. (*Id.*, ¶184).



³⁸ (Ex. 1019, ¶184).

D. Dependent Claim 17

Dependent claim 17 depends on claim 11 and adds “wherein: the biasing member is a coil spring.” Hendricks discloses a “resilient member 36, preferably of a rubber composition” (Exs. 1013, 2:26-31; 1019, ¶¶164, 185). While Hendricks does not expressly disclose the use of a coil spring as the resilient member, or biasing member, to bias the blades toward a deployed position, it would have been obvious to a PHOSITA to use a coiled spring in the broadhead of Hendricks. (Ex. 1019, ¶186). Coiled springs were known alternatives to the type of resilient rubber compositions disclosed in Hendricks for biasing blades in broadheads. (*Id.*, ¶186). The use of coiled springs in broadheads like that disclosed in Hendricks was already routine, and a PHOSITA would understand that it would have been an obvious variation of Hendricks to use a coiled spring as a biasing member. (*Id.*).

A PHOSITA would understand how to arrange a coiled spring to function as a biasing member in the broadhead of Hendricks. (*Id.*, ¶187). No skill or ingenuity would be required to implement a coiled spring given the teachings of Hendricks and the knowledge of a PHOSITA. (*Id.*). Using a coiled spring as the biasing member would have been predictable and would not result in a new or unexpected result. (*Id.*).

XI. CLAIM-BY-CLAIM EXPLANATION OF GROUND 5 FOR UNPATENTABILITY OF CLAIMS 1-4, 9, 11, 12, AND 17

Pursuant to Rule 42.104(b)(4)-(5), the specific grounds discussed below and in the Declaration of Dr. Kuhn demonstrate that the challenged claims are invalid because they are anticipated by Liechty, II.

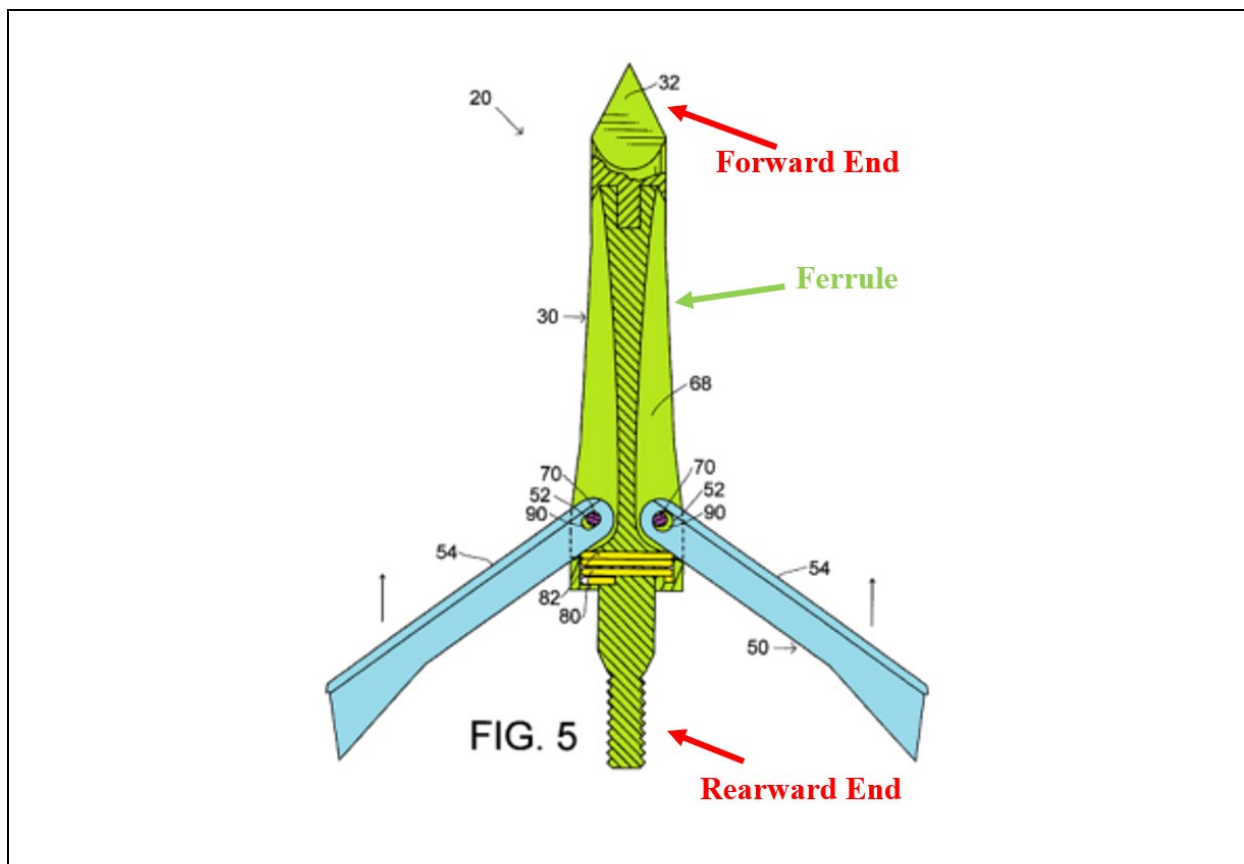
A. Independent Claim 1

The preamble to claim 1 recites “A broadhead for an arrow having a shaft, the broadhead comprising.” To extent the preamble is limiting, Liechty, II discloses an “arrowhead 20 attached to the forward end of the arrow shaft 18.” (Exs. 1012, 10:26-36; 1019, ¶¶188, 190).

1. “a ferrule having a rearward end configured for attachment to the shaft and an opposite forward end with a ferrule body extending therebetween;”

Liechty, II discloses an “arrowhead body 20.” (Exs. 1012, 10:32, Fig. 5; 1019, ¶¶188, 191). As shown below, an annotated version of Figure 5 in Liechty, II, taken from the Declaration of Dr. Kuhn³⁹, shows arrowhead body 20 having a rearward end configured for attachment to the shaft and an opposite forward end. (*Id.*).

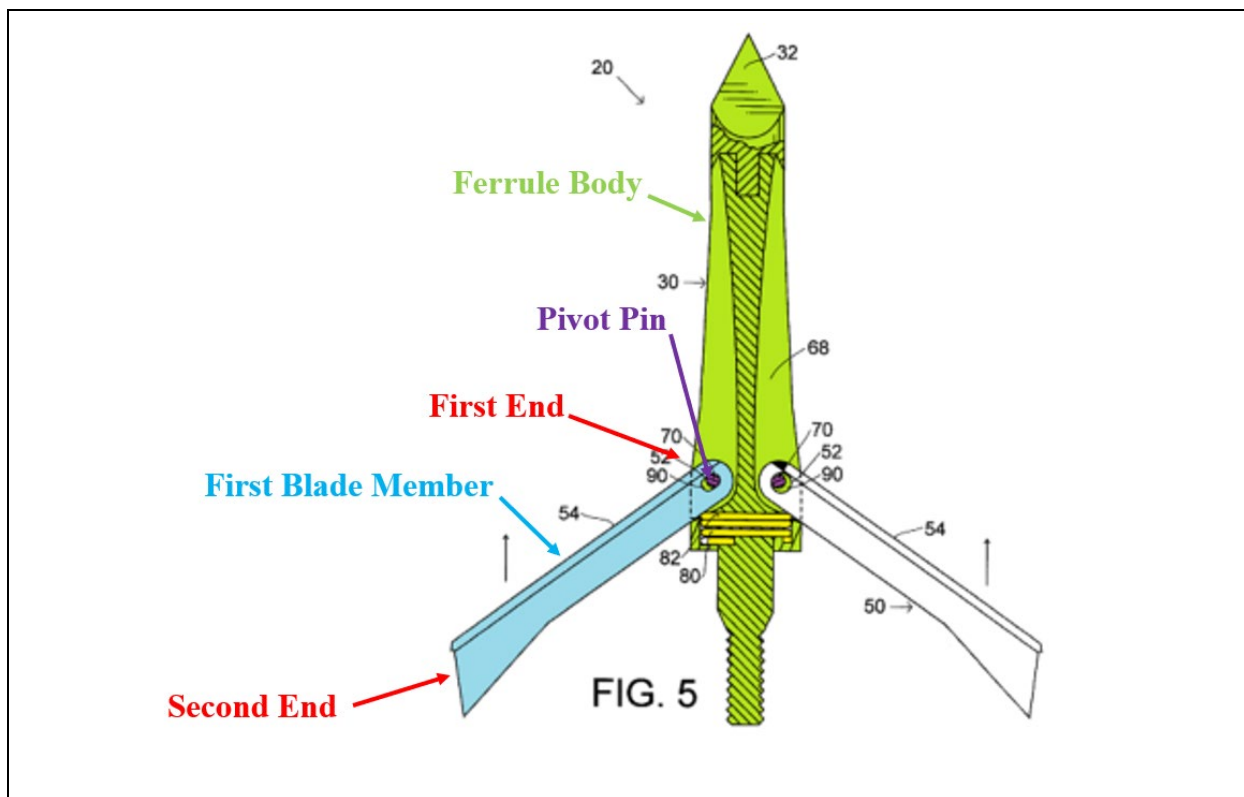
³⁹ (Ex. 1019, ¶191).



2. “a first blade member having a first end pivotally interconnected with the ferrule body and an opposite second end,”

Liechty, II discloses “blades 50 pivotally connected to an arrowhead body 30.” (Exs. 1012, 10:32 and Fig. 5; 1019, ¶¶188, 191). As shown below, in an annotated version of Figure 5 in Liechty, II, taken from the Declaration of Dr. Kuhn⁴⁰, shows that the blades have first and second ends, where the first end is pivotally interconnected with the ferrule body. (*Id.*).

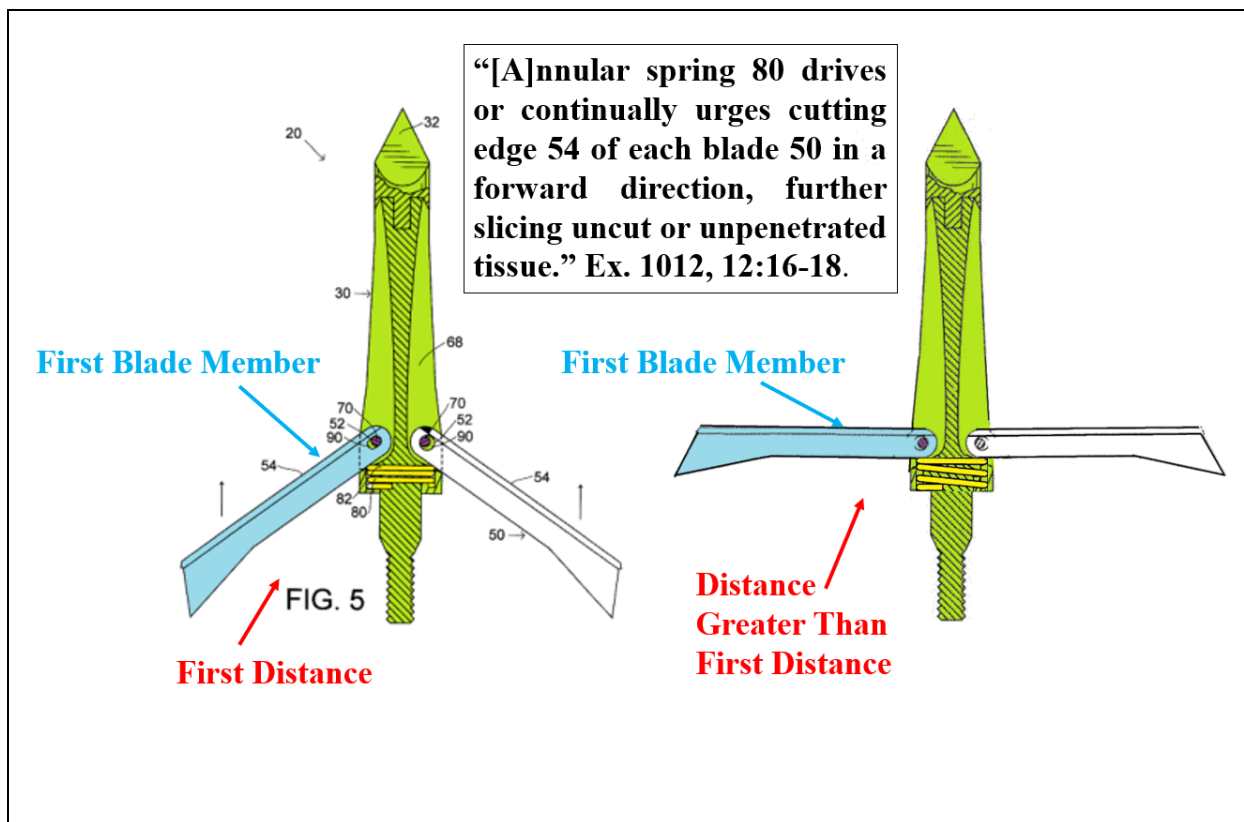
⁴⁰ (Ex. 1019, ¶192).



3. “the first blade member having a retracted position wherein the second end is spaced from the ferrule body at a first distance and an extended position wherein the second end is spaced from the ferrule body by a distance which is greater than the first distance;”

Liechty, II discloses that blade members in Figure 5 are urged forward by annular spring 80. Modified and annotated versions of Figure 5 are shown below⁴¹. As can be seen, as the first blade member moves forward, the space between the first blade member and the ferrule body becomes greater. (Exs. 1012, Fig. 5; 1019, ¶¶188, 193).

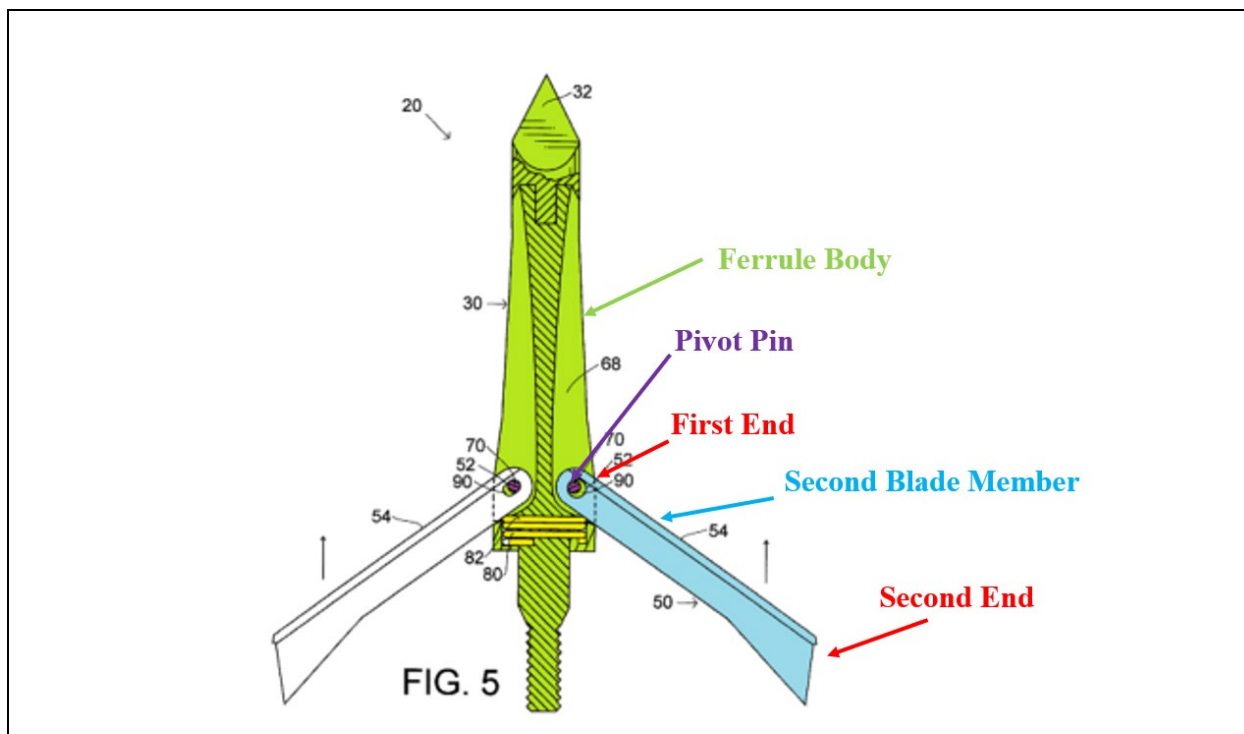
⁴¹ The modified and annotated figures are taken from Dr. Kuhn’s Declaration. (Ex. 1019, ¶¶193).



4. “a second blade member having a first end pivotally interconnected with the ferrule body and an opposite second end,”

Liechty, II discloses: “blades 50 pivotally connected to an arrowhead body 30.” (Exs. 1012, 10:32 and Fig. 5; 1019, ¶¶188, 194). As shown in annotated Figure 5 in Liechty, II, taken from the Declaration of Dr. Kuhn⁴², the blades have a first and second ends, where the first end is pivotally interconnected with the ferrule body. (*Id.*).

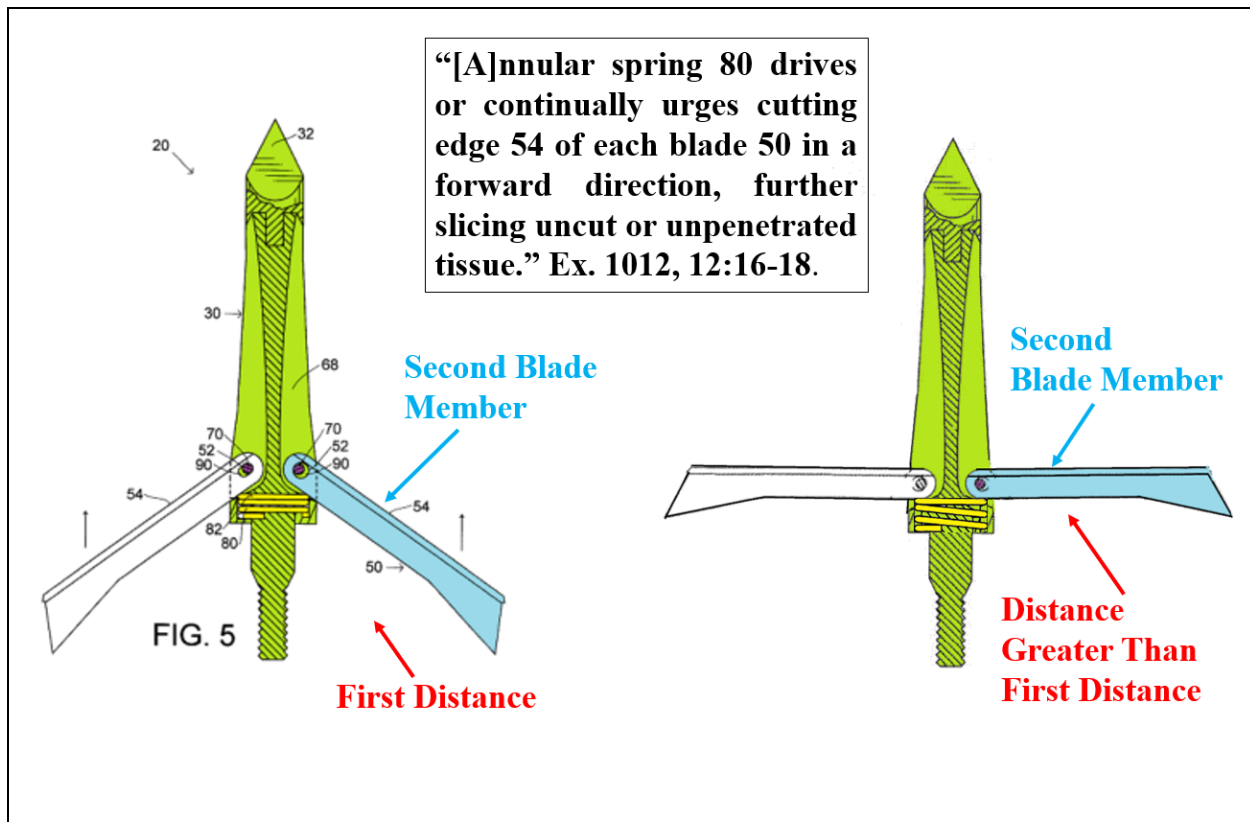
⁴² (Ex. 1019, ¶194).



5. “the [second] blade member having a retracted position wherein the second end is spaced from the ferrule body at a first distance and an extended position wherein the second end is spaced from the ferrule body by a distance which is greater than the first distance; and”

Liechty, II discloses that blade members in Figure 5 are urged forward by annular spring 80. Modified and annotated versions of Figure 5 are shown below⁴³. As can be seen, as the second blade member moves forward, the space between the second blade member and the ferrule body becomes greater. (Exs. 1012, Fig. 5; 1019, ¶¶188, 195).

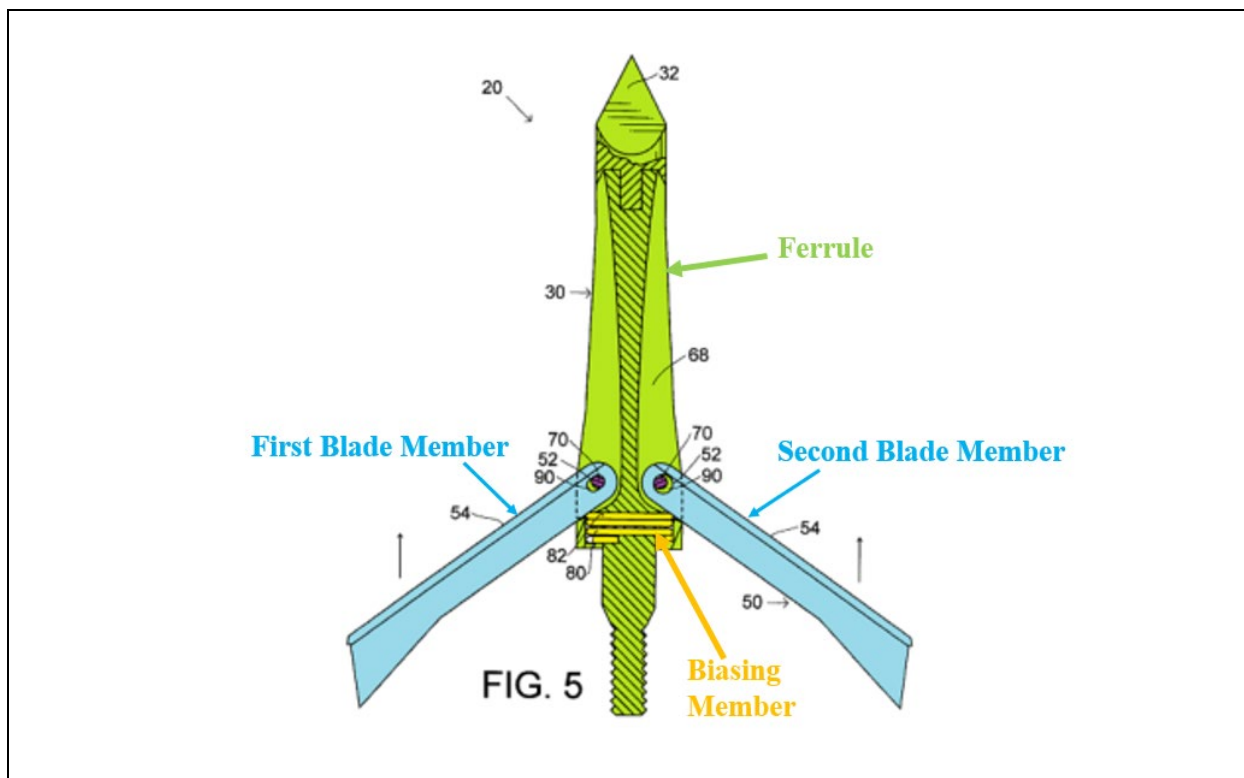
⁴³ Modified and annotated figures are taken from Dr. Kuhn’s Declaration. (Ex. 1019, ¶195).



6. “at least one biasing member biasing the first and second blade members towards the extended positions, the biasing member being the only element operable to hold the blade members in the extended position.”

Liechty, II discloses: “annular spring 80 drives or continually urges cutting edge 54 of each blade 50 in a forward direction, further slicing uncut or unpenetrated tissue.” (Exs. 1012, 12:16-18; Fig. 5; 1019, ¶¶188, 196). As shown in annotated an version of Figure 5, taken from the Declaration of Dr. Kuhn⁴⁴, Liechty, II discloses embodiments wherein the annular spring is the only element operable to hold the blade members in the extended position. (Exs. 1012, 8:61-65; 1019, ¶¶188, 196).

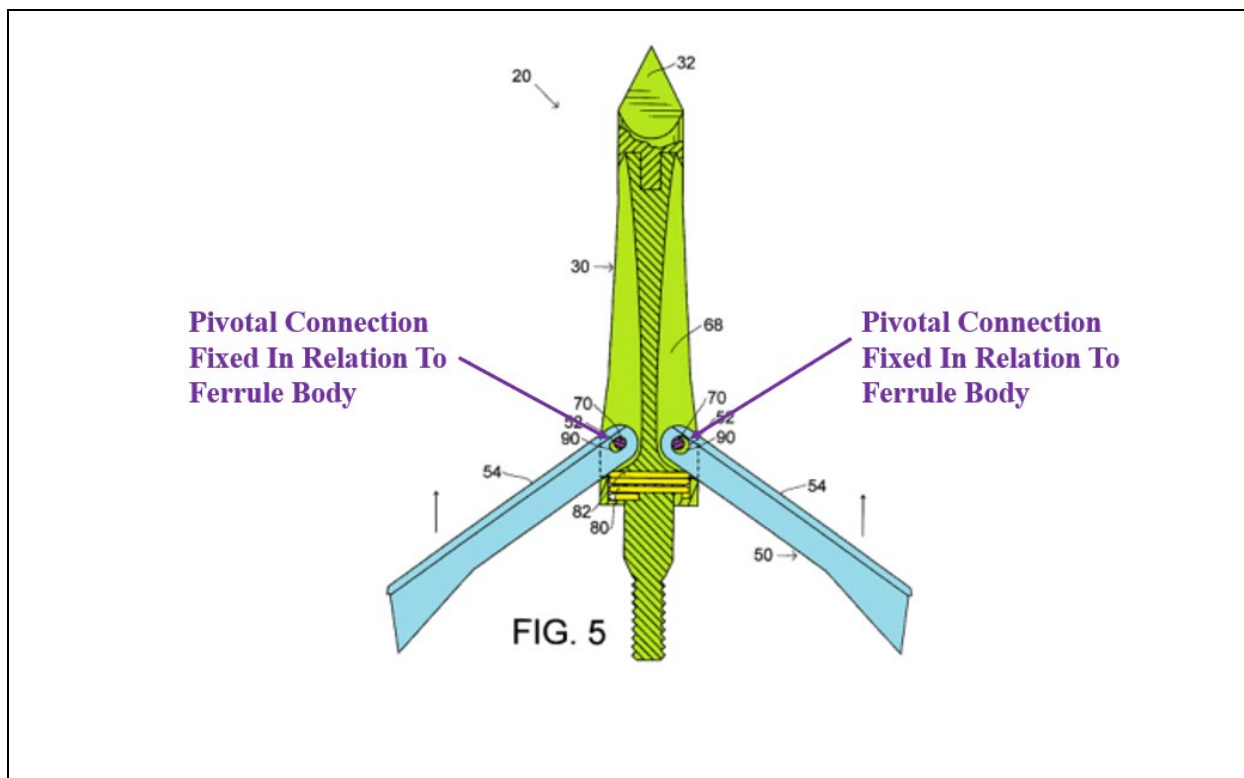
⁴⁴ (Ex. 1019, ¶196).



B. Dependent Claim 2

As shown below in annotated Figure 5 in Liechty, II, taken from the Declaration of Dr. Kuhn⁴⁵, the pivotal interconnections between the blade members and the ferrule body are fixed relative to the ferrule body. (Exs. 1012, Fig. 5; 1019, ¶¶188, 197).

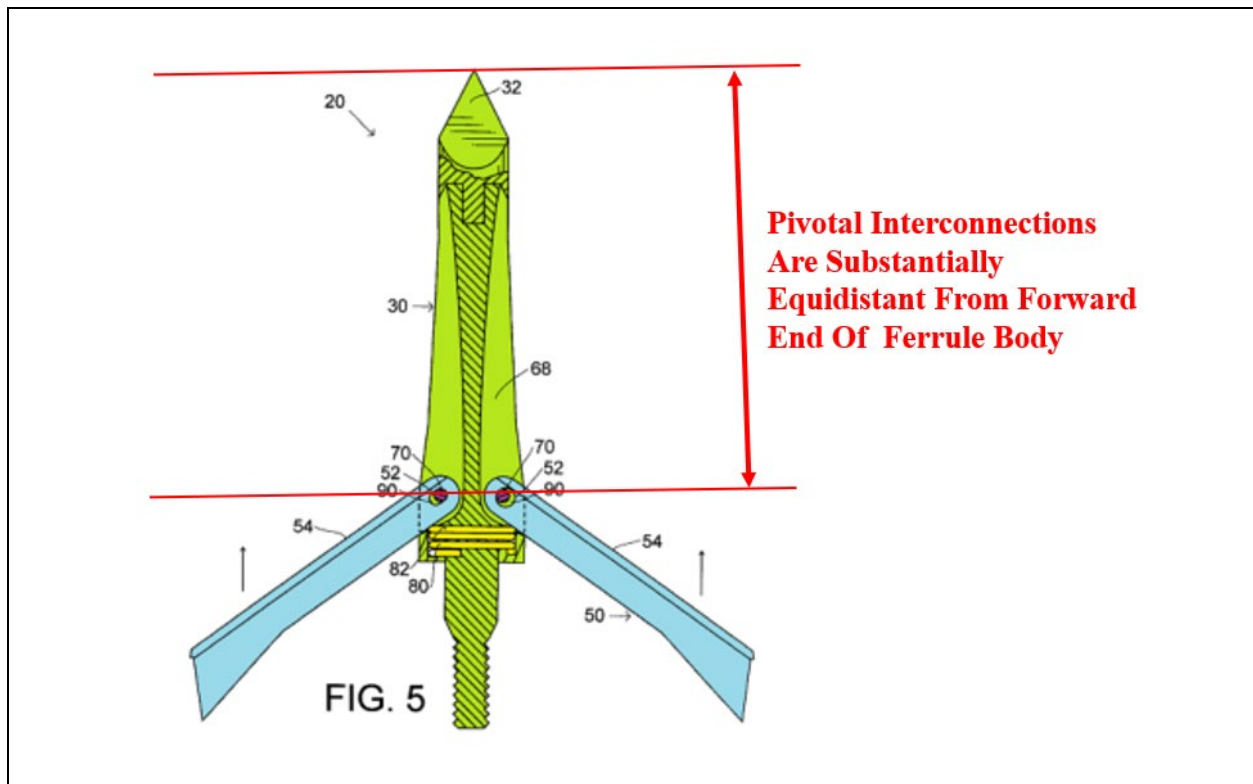
⁴⁵ (Ex. 1019, ¶197).



C. Dependent Claim 3

As shown in annotated Figure 5 of Liechty, II, taken from the Declaration of Dr. Kuhn⁴⁶, the pivotal interconnections between the blade members and the ferrule body are substantially equidistant from the forward end of the ferrule. (Exs. 1012, Fig. 5; 1019, ¶¶188, 198).

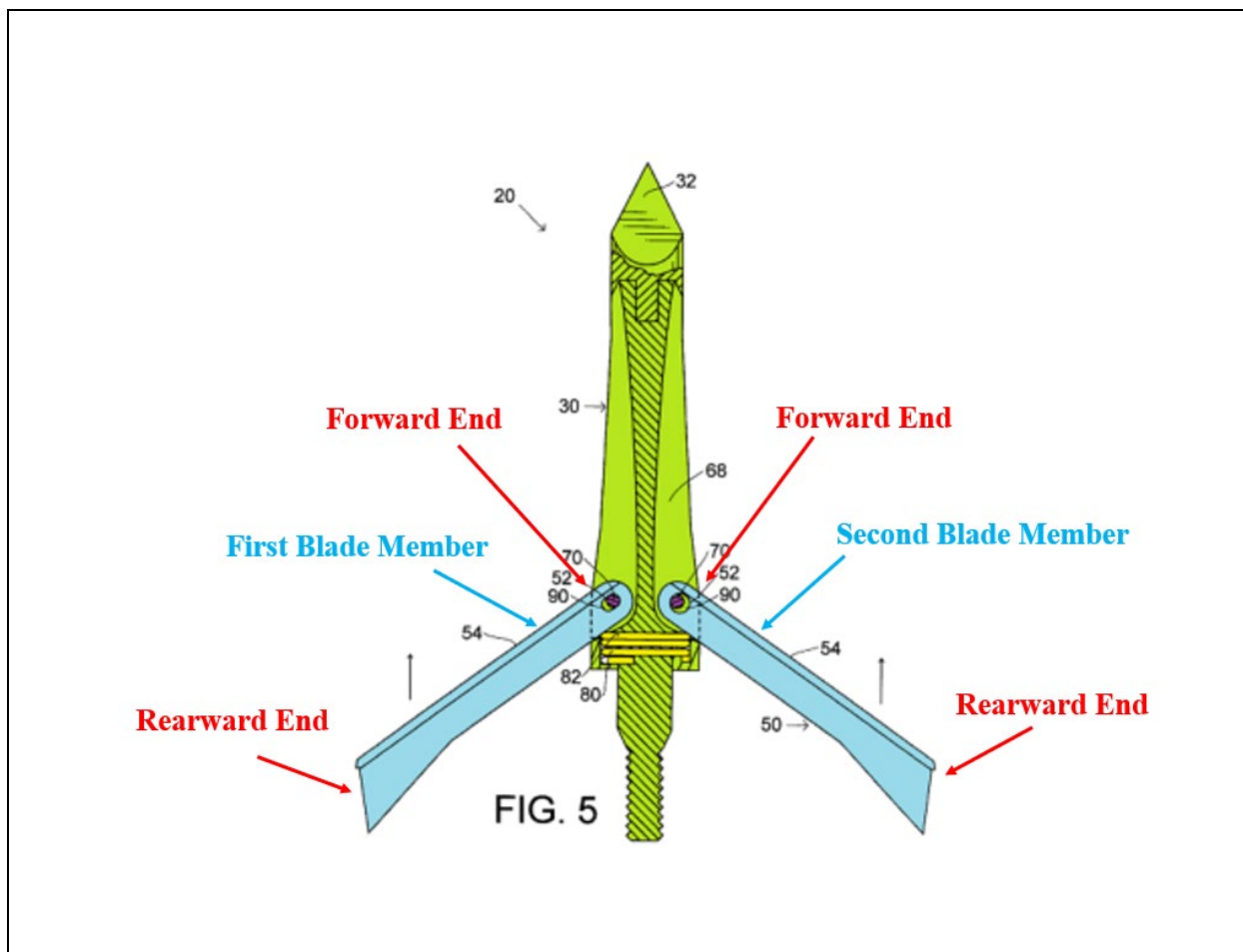
⁴⁶ (Ex. 1019, ¶198).



D. Dependent Claim 4

As shown in annotated Figure 5 in Liechty, II taken from the Declaration of Dr. Kuhn⁴⁷, the first ends of the first and second blade members are forward ends and the second ends are rearward ends. (Exs. 1012, Fig. 5; 1019, ¶¶188, 199).

⁴⁷ (Ex. 1019, ¶199).



E. Dependent Claim 9

Liechty, II discloses that “annular spring 80 drives or continually urges cutting edge 54 of each blade 50 in a forward direction, further slicing uncut or unpenetrated tissue.” (Exs. 1012, 12:16-18; Fig. 5; 1019, ¶¶188, 200).

F. Independent Claim 11

The preamble recites: “A broadhead for an arrow having a shaft, the broadhead comprising: . . .” To extent the preamble is limiting, Liechty, II discloses an “arrowhead 20 attached to the forward end of the arrow shaft 18.” (Exs. 1012, 10:26-36; 1019, ¶¶188, 201).

1. **“a ferrule having a rearward end configured for attachment to the shaft and an opposite forward end with a ferrule body extending therebetween,”**

Liechty, II discloses an “arrowhead body 20.” (Exs. 1012, 10:32, Fig. 5; 1019, ¶¶188, 202). As shown in the annotated version of Figure 5 of Liechty, II in Section XI.A.1, the arrowhead body 20 has a rearward end configured for attachment to the shaft and an opposite forward end. (*Id.*).

2. **“the forward end of the ferrule defining the forward tip of the arrow and being fixed with respect to the ferrule body;”**

Liechty, II discloses that a “tip end 32 . . . may be integral with arrowhead body 30” (Exs. 1012, 15:40-43; 1019, ¶¶188, 203).

3. **“a first blade member having a forward end pivotally interconnected with the ferrule body and an opposite rearward end,”**

Liechty, II discloses: “blades 50 pivotally connected to an arrowhead body 30.” (Exs. 1012, 10:32 and Fig. 5; 1019, ¶¶188, 204). As shown in the annotated version of Figure 5 of Liechty, II in Section XI.A.2, the first blade member has a forward end pivotally interconnected with the ferrule body and an opposite rearward end.

4. **“the first blade member having a retracted position wherein the rearward end is spaced from the ferrule body at a first distance and an extended position wherein the rearward end is spaced from the ferrule body by a distance which is greater than the first distance,”**

As shown in the modified and annotated figures in Section XI.A.3., the space between the first blade member and the ferrule body is greater when the first blade member is in an extended position. (Exs. 1012, Fig. 5; 1019, ¶¶188, 205).

5. **“the pivotal interconnection between the first blade member and the ferrule body being at a fixed position relative to the ferrule body;”**

As shown in the annotated version of Figure 5 of Liechty, II, in Section XI.B, the pivotal interconnection between the first blade member and the ferrule body is fixed relative to the ferrule body. (Exs. 1012, Fig. 5; 1019, ¶¶188, 206).

6. **“a second blade member having a forward end pivotally interconnected with the ferrule body and an opposite rearward end,”**

Liechty, II discloses: “blades 50 pivotally connected to an arrowhead body 30.” (Exs. 1012, 10:32 and Fig. 5; 1019, ¶¶188, 207). As shown in the annotated Figure 5 of Liechty, II in Section XI.A.4., the second blade member has a forward end pivotally interconnected with the ferrule body and an opposite rearward end.

7. **“the second blade member having a retracted position wherein the rearward end is spaced from the ferrule body at a first distance and an extended position wherein the rearward end is spaced from the ferrule body by a distance which is greater than the first distance,”**

As shown in the modified and annotated figures in Section XI.A.5., the space between the second blade member and the ferrule body is greater when the second blade member is in an extended position. (Exs. 1012, Fig. 5; 1019, ¶¶188, 208).

8. **“the pivotal interconnection between the second blade member and the ferrule body being at a fixed position relative to the ferrule body; and”**

As shown in annotated Figure 5 of Liechty, II, in Section XI.B., the pivotal interconnection between the second blade member and the ferrule body is fixed relative to the ferrule body. (Exs. 1012, Fig. 5; 1019, ¶¶188, 209).

9. **“at least one biasing member biasing the first and second blade members towards the extended positions.”**

As shown in annotated Figure 5 in Section XI.A.6, Liechty, II discloses: “annular spring 80 drives or continually urges cutting edge 54 of each blade 50 in a forward direction, further slicing uncut or unpenetrated tissue.” (Exs. 1012, 12:16-18; Fig. 5; 1019, ¶¶188, 210).

G. Dependent Claim 12

As shown in annotated Figure 5 of Liechty, II, in Section XI.C, the pivotal interconnections between the blade members and the ferrule body are substantially

equidistant from the forward end of the ferrule. (Exs. 1012, Fig. 5; 1019, ¶¶188, 211).

H. Dependent Claim 17

Liechty, II discloses: “annular spring 80 drives or continually urges cutting edge 54 of each blade 50 in a forward direction, further slicing uncut or unpenetrated tissue.” (Exs. 1012, 12:16-18; Fig. 5; 1019, ¶¶188, 212). Liechty, II discloses: “Bias means may include a single bias element urging a plurality of blades, or may be an individual bias element for each blade, or a combination thereof. Bias means for example, can include, cantilevers, rubber material, certain hydraulic systems and/or filled bladder systems, and springs such as compression, coil or leaf.” (Exs. 1012, 12:36-41; 1019, ¶¶188, 212).

XII. CONCLUSION

For the foregoing reasons, Petitioners respectfully submit that *inter partes* review of claims 1-4, 7, 9, 11, 12, 15, and 17 of U.S. Patent No. 8,043,177 should be instituted on the grounds set forth herein.

BANNER & WITCOFF, LTD

Dated: January 8, 2024

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CERTIFICATION UNDER 37 CFR § 42.24(d)

Under the provisions of 37 CFR § 42.24(d), the undersigned hereby certifies that the word count for the foregoing Petition for Inter Partes Review totals 13,721, which is less than the 14,000 allowed under 37 CFR § 42.24(a)(1)(i). This total includes 13,100 words as counted by the Word Count feature of Microsoft Word and 621 words used in annotations.

Pursuant to 37 C.F.R. § 42.24(a)(1), this count does not include the table of contents, the table of authorities, mandatory notices under § 42.8, the certificate of service, this certification of word count, the claims listing appendix, or appendix of exhibits.

BANNER & WITCOFF, LTD

Dated: January 8, 2024

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CERTIFICATE OF SERVICE

Pursuant to 37 C.F.R. § 42.105, I hereby certify that I caused a true and correct copy of this Petition for *Inter Partes* Review in connection with U.S. Patent No. 8,043,177 and supporting evidence to be served via FedEx Priority Overnight on January 8, 2024, on the following:

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