

Nos. 2021-2049, 2024-1084, 2024-1159

**United States Court of Appeals
for the Federal Circuit**

PAUL E. ARLTON and DAVID J. ARLTON,

Plaintiffs-Appellants,

v.

AEROVIRONMENT, INC.,

Defendant-Cross-Appellant.

*On Appeals from the United States District Court for the
Central District of California in Case No. 2:20-cv-07438-AB-GJS*

**CORRECTED OPENING BRIEF FOR APPELLANTS
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U.S. Patent No. 8,042,763

Claim 1

- 1 . A rotary wing aircraft comprising
 - a non-rotating structural backbone,
 - a first rotor system coupled to the non-rotating structural backbone including first variable pitch rotor blades supported by a first rotor shaft for rotation about an axis of rotation in a first rotor plane and controlled by a first blade pitch controller which includes cyclic pitch control,
 - a second rotor system coupled to the non-rotating structural backbone including second variable pitch rotor blades supported by a second rotor shaft for rotation about the axis of rotation in a second rotor plane and controlled by a second blade pitch controller which includes cyclic pitch control, the second rotor plane being positioned to lie in axially spaced apart relation to the first rotor plane along the axis of rotation,
- wherein the first blade pitch controller is coupled to the non-rotating structural backbone so that neither the first rotor shaft nor the second rotor shaft extends through the first blade pitch controller.

**UNITED STATES COURT OF APPEALS
FOR THE FEDERAL CIRCUIT**

CERTIFICATE OF INTEREST

Case Number 21-2049; 24-1084; 24-1159

Short Case Caption Arlton et al. v. AeroVironment

Filing Party/Entity Appellants Paul E. Arlton and David J. Arlton

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Date: September 10, 2024

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<p>1. Represented Entities. Fed. Cir. R. 47.4(a)(1).</p>	<p>2. Real Party in Interest. Fed. Cir. R. 47.4(a)(2).</p>	<p>3. Parent Corporations and Stockholders. Fed. Cir. R. 47.4(a)(3).</p>
<p>Provide the full names of all entities represented by undersigned counsel in this case.</p>	<p>Provide the full names of all real parties in interest for the entities. Do not list the real parties if they are the same as the entities.</p> <p><input type="checkbox"/> None/Not Applicable</p>	<p>Provide the full names of all parent corporations for the entities and all publicly held companies that own 10% or more stock in the entities.</p> <p><input checked="" type="checkbox"/> None/Not Applicable</p>
<p>Paul E. Arlton (an individual)</p>	<p>Lite Machines Corp.</p>	
<p>David J. Arlton (an individual)</p>		

Additional pages attached

4. Legal Representatives. List all law firms, partners, and associates that (a) appeared for the entities in the originating court or agency or (b) are expected to appear in this court for the entities. Do not include those who have already entered an appearance in this court. Fed. Cir. R. 47.4(a)(4).

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None/Not Applicable Additional pages attached

TABLE OF CONTENTS

CERTIFICATE OF INTEREST	i
TABLE OF CONTENTS	iv
TABLE OF AUTHORITIES	vi
STATEMENT OF RELATED CASES	1
STATEMENT OF JURISDICTION	1
STATEMENT OF THE ISSUES.....	2
STATEMENT OF THE CASE	4
A. For over a decade, the Government contracts with Lite in connection with the Arltons’ patented technology.....	4
B. AeroVironment contracts with the Government, copies the Arltons’ technology, and displaces Lite.....	7
C. The district court grants summary judgment based on AeroVironment’s invocation of Section 1498 and representations regarding commercial use of the Arltons’ technology.....	11
D. AeroVironment introduces “Terry” on national television, leading the district court to vacate its summary judgment decision.....	14
E. Discovery reveals AeroVironment’s substantial use of the Arltons’ patented technology.....	17
F. Despite AeroVironment’s uses of the patented technology, the district court affirms summary judgment under Section 1498.....	19
G. The district court also denies the Arltons’ motion to amend.....	20
SUMMARY OF ARGUMENT.....	24

STANDARD OF REVIEW.....	27
ARGUMENT	29
I. The district court erred in holding AeroVironment immune from suit under 28 U.S.C. § 1498.....	29
A. The Government cannot provide its consent to AeroVironment’s infringement as a matter of law.....	31
i. The Phase III Mandate imposes SBIR obligations on the Government.....	31
ii. The district court erred in finding that the Government has no SBIR obligations to Lite or the Arltons.	35
B. The district court’s conclusion that Section 1498 supersedes the Phase III Mandate is error.	38
II. The district court erred in applying the <i>de minimis</i> doctrine to bar claims against AeroVironment.	42
A. The <i>de minimis</i> doctrine provides a narrow exception to patent infringement.....	43
B. The <i>de minimis</i> exception is not applicable to AeroVironment’s non-governmental use of Terry.....	47
III. The district court abused its discretion in failing to permit the Arltons the opportunity to amend their complaint.....	52
A. Rule 16’s “good cause” standard demands only reasonable diligence.....	53
B. The Arltons demonstrated good cause.....	57
C. AeroVironment failed to overcome the presumption in favor of amendment Under Rule 15.	62
CONCLUSION	63

TABLE OF AUTHORITIES

	Page(s)
Cases	
<i>Adasa Inc. v. Avery Dennison Corp.</i> , 55 F.4th 900 (Fed. Cir. 2022).....	27, 28
<i>Anderson v. Liberty Lobby, Inc.</i> , 477 U.S. 242 (1986).....	28
<i>Ascon Props., Inc. v. Mobil Oil Co.</i> , 866 F.2d 1149 (9th Cir. 1989).....	62
<i>Baxter Diagnostics v. AVL Sci. Corp.</i> , 924 F. Supp. 994 (C.D. Cal. 1996)	44, 50
<i>Benchmark Young Adult School, Inc. v. Launchworks Life Srvs., LLC</i> , No. 12-cv-02953-BAS(BGS), 2014 U.S. Dist. LEXIS 91136 (S.D. Cal. July 3, 2014)	60
<i>Blumenfeld Dev. Grp. Ltd. v. Sadlerstone, LLC</i> , No. 21-cv-1117-WQH-MSB, 2022 U.S. Dist. LEXIS 141032 (S.D. Cal. Aug. 8, 2022).....	54
<i>Bowles v. Reade</i> , 198 F.3d 752 (9th Cir. 1999).....	28
<i>Copenhaver v. Cavagna Grp. S.p.A Omeca Div.</i> , No. CV 19-71-BLG-SPW-TJC, 2021 U.S. Dist. LEXIS 139957 (D. Mon. July 27, 2021).....	55
<i>Days Corp. v. Lippert Components, Inc.</i> , 558 F. Supp. 3d 689 (N.D. Ind. 2021).....	44
<i>Delux Pub. Charter, LLC v. Cnty. of Orange</i> , No. 8:20-cv-02344-JVS, 2022 U.S. Dist. LEXIS 240133 (C.D. Cal. Mar. 2, 2022)	52

Eckert Cold Storage, Inc. v. Behl,
934 F. Supp. 1230 (E.D. Cal. 1996) 56, 57

Edwards Lifesciences Corp. v. Meril Life Scis. Pvt. Ltd.,
No. 4:19-cv-06593-HSG,
2020 U.S. Dist. LEXIS 27308 (N.D. Cal. Feb. 18, 2020)..... 44

Embrex, Inc. v. Serv. Eng’g Corp.,
216 F.3d 1343 (Fed. Cir. 2000) 26, 43, 44

Foman v. Davis,
371 U.S. 178 (1962)..... 53, 54, 62, 63

Hutchinson Indus. Inc. v. Accuride Corp.,
No. CIV A 09-1489 FLW,
2010 U.S. Dist. LEXIS 30527 (D.N.J. Mar. 30, 2010)..... 45

Jenkins v. City of Vallejo,
No. 2:19-cv-01896-TLN-DB,
2022 U.S. Dist. LEXIS 5711 (E.D. Cal. Jan. 11, 2022) 55

Johnson v. Mammoth Recreations,
975 F.2d 604 (9th Cir. 1992)..... 54, 56

La Quinta Worldwide LLC v. Q.R.T.M., S.A. de C.V.,
762 F.3d 867 (9th Cir. 2014)..... 29

Largan Precision Co. v. Genius Elec. Optical Co.,
86 F. Supp. 3d 1105 (N.D. Cal. Mar. 31, 2015) 44

Lexecon, Inc. v. Milberg Weiss Bershad Hynes & Lerach,
523 U.S. 26 (1998)..... 34

Lite Machines Corp. v. United States,
143 Fed. Cl. 267 (2019) 6, 31, 35

Madey v. Duke Univ.,
307 F.3d 1351 (Fed. Cir. 2002) 27, 29, 30

Medical Solutions, Inc. v. Change Surgical LLC,
541 F.3d 1136 (Fed. Cir. 2008) 46

Millenkamp v. Davisco Foods Int’l, Inc.,
448 F. App’x 720 (9th Cir. 2011)..... 28

Neff Instrument Corp. v. Cohu Elec., Inc.,
269 F.2d 668 (9th Cir. 1959)..... 50

Night Vision Corp. v. United States,
68 Fed. Cl. 368 (2005) 25, 35, 36, 37

Norton v. LVNV Funding, LLC,
No. 18-cv-05051-DMR,
2020 U.S. Dist. LEXIS 88809 (N.D. Cal. May 19, 2020)..... 54

NPD Research, Inc. v. United States,
15 Ct. Cl. 113 (Ct. Cl. 1988)..... 52

Raymond Eng’g Inc. v. Miltope Corp.,
No. 85 CIV. 2685 (RWS),
1986 U.S. Dist. LEXIS 25135 (S.D.N.Y. May 23, 1986)..... 45

Regents of the Univ. of New Mexico v. Knight,
321 F.3d 1111 (Fed. Cir. 2003) 28

Richmond Screw Anchor Co. v. United States,
275 U.S. 331 (1928)..... 30

Roche Prods., Inc. v. Bolar Pharm. Co.,
733 F.2d 858 (Fed. Cir. 1984), *superseded on other
grounds by statute*, 35 U.S.C. § 271(e) 50

Ross v. AT&T Mobility, LLC,
No. 19-cv-06669-JST2020,
U.S. Dist. LEXIS 255689 (N.D. Cal. Dec. 18, 2020)..... 55

Simpson v. Evans,
525 F. App’x 535 (9th Cir. 2013)..... 29

Smith v. Pac. Prop. Dev. Co.,
358 F.3d 1097 (9th Cir. 2004)..... 62

St.-Gobain Ceramics & Plastics, Inc. v. II-VI Inc.,
369 F. Supp. 3d 963 (C.D. Cal. 2019) 45

Starship LLC v. Ghacham, Inc.,
Case No. LA CV 21-04665 JAK,
2023 U.S. Dist. LEXIS 156806 (C.D. Cal. July 10, 2023) 56

Stoddart v. Express Srvs.,
No. 2:12-cv-01054-KJM-CKD,
2017 U.S. Dist. LEXIS 123688 (E.D. Cal. Aug. 4, 2017)..... 61

Trading Techs. Int’l, Inc. v. eSpeed Inc.,
No. 04 C 5312, 2007 U.S. Dist. LEXIS 12965 (N.D. Ill.
Feb. 21, 2007), *aff’d* 595 F.3d 1340 (Fed. Cir. 2010) 43

TVI Energy Corp. v. Blane,
806 F.2d 1057 (Fed. Cir. 1986) 25, 40

United States v. Meyers,
847 F.2d 1408 (9th Cir. 1988) 28

Yang v. Actionet, Inc.,
No. CV 14-00792-AB(SHx),
2015 U.S. Dist. LEXIS 190365 (C.D. Cal. Feb. 6, 2015) 53, 57

Statutes

15 U.S.C. § 638 *passim*

15 U.S.C. § 638(r)(4) *passim*

28 U.S.C. § 1498 *passim*

35 U.S.C. § 271 *passim*

35 U.S.C. § 284 51

Other Authorities

C.D. Cal. Local Rule 6-1 58

C.D. Cal. Local Rule 7-3 22, 58

Federal Rule of Civil Procedure 15 53, 54, 62, 63

Federal Rule of Civil Procedure 16 *passim*

SBIR/STTR Notice of Proposed Amendments, 81 Fed. Reg.
No. 67 (20487) (Apr. 7, 2016)..... 34, 36, 41

STATEMENT OF RELATED CASES

Appellants Paul E. Arlton and David J. Arlton (the “Arltons” or “Appellants”) state that they and their company Lite Machines Corporation (“Lite”) have sought to bring claims against the Government for the Mars Helicopter’s infringement of U.S. Patent No. 8,042,763B2 (“the ’763 patent”) in *Lite Machines Corporation, et al. v. The United States*, No. 18-1411C (Ct. Clms.). Lite, as an SBIR Phase III award recipient, also has asserted claims for breach of contract and a taking of its SBIR Phase III rights in violation of the Fifth Amendment. As such, this matter pending before the United States Court of Federal Claims may be considered related to the present appeals.

STATEMENT OF JURISDICTION

Pursuant to 28 U.S.C. § 1295(a)(1), this Court has jurisdiction over the appeal of a final decision of a district court arising under the patent laws. The Court has subject matter jurisdiction under 28 U.S.C. §§ 1331 and 1338(a). The Arltons filed timely notices of appeal on June 10, 2021, and on October 11, 2023. Thereafter, this Court consolidated Appeal Nos. 2021-2049 and 2024-1084 by Order dated November 8, 2023. Appellee AeroVironment, Inc. (“AeroVironment”)

filed a timely notice of appeal on November 9, 2023. On December 1, 2023, the Court further consolidated Appeal Nos. 2021-2049, 2024-1084, and 2024-1159 and designated Appeal No. 2024-1159 as a cross-appeal.

STATEMENT OF THE ISSUES

These appeals concern the Mars Helicopter Ingenuity, which incorporates an airframe and rotor system that infringes the Arltons' '763 patent. The Arltons brought this patent infringement action on August 17, 2020, a few weeks after NASA sent the Mars Helicopter Ingenuity to Mars on board NASA's Perseverance Rover.

Viewed more broadly, this matter concerns years of hard work and innovation by two brothers and their small business. Despite their rights under the Small Business Innovation Research ("SBIR") statute, their patented technology, and a decade of successful collaboration with the Government, the fruits of the Arltons' labors were taken by the Government and bestowed upon others. Consequently, even though they took specific steps to protect their invention vis-à-vis both the Government and private parties, the Arltons have been robbed of their technology and their livelihoods.

Moreover, the Arltons learned through discovery in this matter that AeroVironment—in addition to willfully infringing the '763 patent—has engaged in the theft of trade secrets belonging to the Arltons and Lite.

The Arltons now seek reversal of the district court's two summary judgment rulings as well as the denial of their motion for leave to file a first amended complaint and to join Lite as a plaintiff.

The issues on appeal are:

1. Does 28 U.S.C. § 1498 enable the Government to consent to patent infringement by AeroVironment where such consent breaches its contractual and statutory obligations to Lite, a Phase III award recipient, pursuant to the SBIR statute?

2. Does AeroVironment's widespread use of "Terry," the terrestrial version of the Mars Helicopter Ingenuity, constitute "*de minimis*" activity, extending Section 1498 immunity to infringing activity that would otherwise be compensable under 35 U.S.C. § 271?

3. Did the district court properly exercise its discretion in holding that the Arltons failed to show "good cause" under Federal Rule of Civil Procedure 16 by imposing a requirement that the Arltons

demonstrate extreme diligence while at the same time ignoring circumstances that were outside the Arltons' control?

STATEMENT OF THE CASE

A. For over a decade, the Government contracts with Lite in connection with the Arltons' patented technology.

The Arltons are brothers who together founded Lite in 1991. Appx359. Since 2002, the Arltons' Unmanned Aerial Vehicle ("UAV") technologies have been described in more than 60 domestic and international patent applications and issued patents. Appx96. In particular, the Arltons are co-owners of the '763 patent, which issued on October 25, 2011. Appx40. The '763 patent is entitled "Rotary Wing Vehicle" and "relates to aerial vehicles and particularly to unmanned aerial vehicles (UAV)." *Id.* The Arltons have licensed the '763 patent to Lite "to commercialize this technology as the Voyeur UAV and the Tiger Moth UAV." Appx360. "Both the Voyeur UAV and Tiger Moth UAV include the features of at least claim 1 of the '763 patent." *Id.*

Since 2005, the Arltons' company, Lite, "has been awarded over \$30 million in [SBIR] and Small Business Technology Transfer ("STTR") sole-source prime contracts under 15 U.S.C. § 638 to develop

and demonstrate the Voyeur UAV and Tiger Moth UAV for the Navy, Air Force, Army, and Special Operations Command.” Appx360. In all instances, these contracts utilized the technology of the ’763 patent. *Id.*

On September 29, 2010, the Air Force awarded Lite an SBIR Phase III sole-source prime contract numbered FA8651-10-C-0337 with the objective of refining “the Tiger Moth stability and control system for the United States Special Operations Command (“USSOCOM”).” *Id.* Under the 2010 Phase III Contract the Air Force contracted with Lite to pay \$1,386,274 for “[f]ive (5) Tiger Moth V6.1 vehicles to support control system developments and flight testing” Appx374.

In May 2012, the Arltons presented a scientific research paper entitled “Control System Development and Flight Testing of the Tiger Moth UAV” at the American Helicopter Society 68th Annual Forum. Appx361, Appx393. The research paper states that: “Lite Machines is currently working under a U.S. Air Force SBIR Phase III contract to refine the Tiger Moth V6.1 control system for more extensive air launched flight tests.” Appx393.

From October 2015 until January 2016, Lite negotiated “with the Air Force for three new SBIR Phase III research, development, and commercialization contracts that included the Mars Helicopter.” Appx362. “The negotiations concerned the ’763 patent and the Tiger Moth UAV technology [the Arltons] developed and described in [the] SBIR Phase III research paper” that they co-authored with the helicopter scientists at NASA Ames in 2012.¹ *Id.* “[O]n February 5, 2016, [the Arltons] were suddenly and unexpectedly informed that there was no funding for the Tiger Moth UAV or any follow-on work.” Appx363. As a result, the Arltons closed Lite, laid off its workforce, and abandoned their production facility in California. *Id.*

¹ The Air Force authorized the payment of license fees to the Arltons for the ’763 patent on multiple occasions between 2013 and 2015. Appx362. On October 9, 2013, for example, the Air Force awarded Contract No. xxx-14-D-0111 (the “2013 Phase III Contract”) to Lite. *See Lite Machines Corp. v. United States*, 143 Fed. Cl. 267, 271 (2019) (*motion to reconsider pending*); Appx539. The 2013 Phase III Contract was a “cost reimbursement plus fixed-fee, incentive fee, indefinite delivery indefinite quantity, sole-source SBIR Phase III prime contract for development and demonstration of the Tiger Moth” UAV. *Id.* The period of performance of the 2013 Phase III Contract was up to seventy-two months after contract award with maximum payments of \$21,000,000. *Id.*

B. AeroVironment contracts with the Government, copies the Arltons' technology, and displaces Lite.

AeroVironment is a corporation that specializes in fixed-wing UAVs, not helicopters. Appx1078. Prior to working on the Mars Helicopter, AeroVironment had little experience with helicopters in general and no experience at all with coaxial rotor helicopters. Appx355, Appx365, Appx1078, Appx1124. AeroVironment's chief engineer at the outset of the Mars Helicopter program, Mr. Matthew Keennon, had electrical engineering expertise, but little to no experience working on helicopters. Appx1098–1099. Toward the end of the Mars Helicopter program, a mechanical engineer, who was recruited directly out of college, assumed responsibility as chief engineer. Appx1093, Appx1172.

AeroVironment's first subcontract with the Jet Propulsion Laboratory ("JPL")² (No. 1494045) was dated November 20, 2013 and involved developing a "Program Plan" for the "Propulsion" and "Fuselage portions" of a "Heli-Scout" UAV and generating test data for "Mars Heli-Scout Subsystems." Appx141, Appx144. The Heli-

² JPL is a federally funded research and development center ("FFRDC"). Appx174.

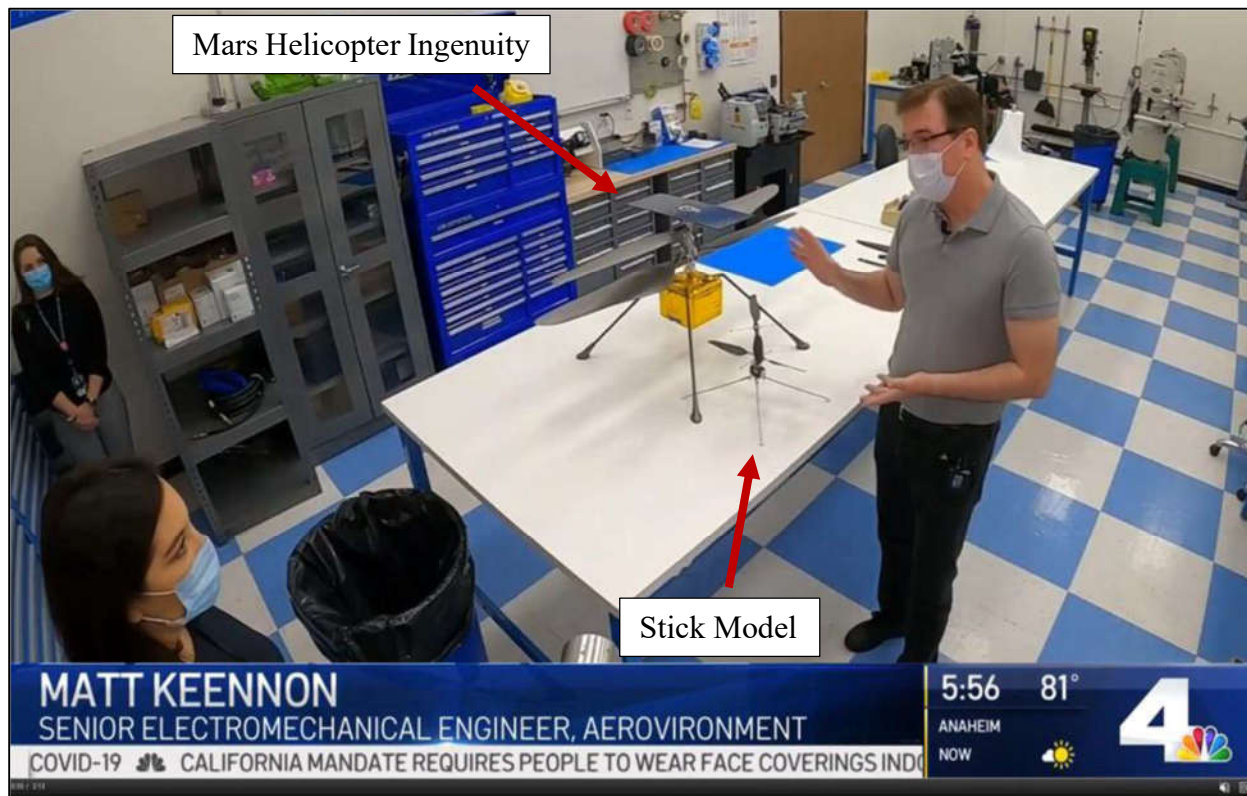
Scout UAV was a “coax VTOL” (coaxial rotor Vertical Take-Off and Landing aircraft), but it did not use the Arltons’ technology or practice the claims of the ’763 patent. Appx149–152. Rather, AeroVironment’s first prototypes of the Heli-Scout were small stick-like models weighing just a few ounces that lacked complete control systems. As a result, these prototypes were unstable, uncontrollable, and “crash[ed] spectacularly” when tested at JPL. Appx991, Appx1185 (describing helicopter as “wobbl[ing]” and “spin[ning]” in a “toilet-bowling motion.”).

AeroVironment’s second contract with JPL, which called for additional work in connection with the Heli-Scout, was dated September 8, 2014 (No. 1512602). Appx149. That contract directed AeroVironment to continue work on its stick-like model. Appx152. But then the Heli-Scout suddenly and unexpectedly changed. Appx497; *see also* Appx1179–1191. In early 2016, AeroVironment diverged substantially from the original statement of work included in its second contract with JPL to build a prototype Mars Helicopter almost identical to the Tiger Moth UAV. *Compare* Appx152 *with* Appx497; *see also* Appx1179–1191. AeroVironment delivered the

prototype Mars Helicopter to JPL on February 9, 2016. Appx106–107.

This development coincided within days of the abrupt end of the Arltons' work with the Air Force on February 5, 2016. Appx363.

As illustrated below, AeroVironment's new Mars Helicopter bore little resemblance to its previous stick-like model:³



³ <https://www.nbclosangeles.com/news/national-international/here-are-ways-to-getinvolved-in-nasas-mars-rover-launch/2403611/>

Moreover, AeroVironment's prototype Mars Helicopter incorporated the non-rotating mast structure claimed in the '763 patent. Appx365; compare Appx368 with Appx57 ('763 patent, Fig. 15) (shown below).

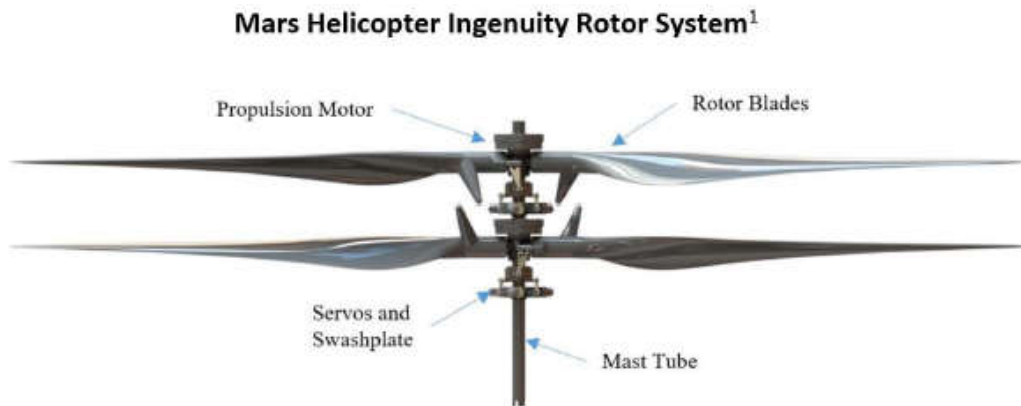
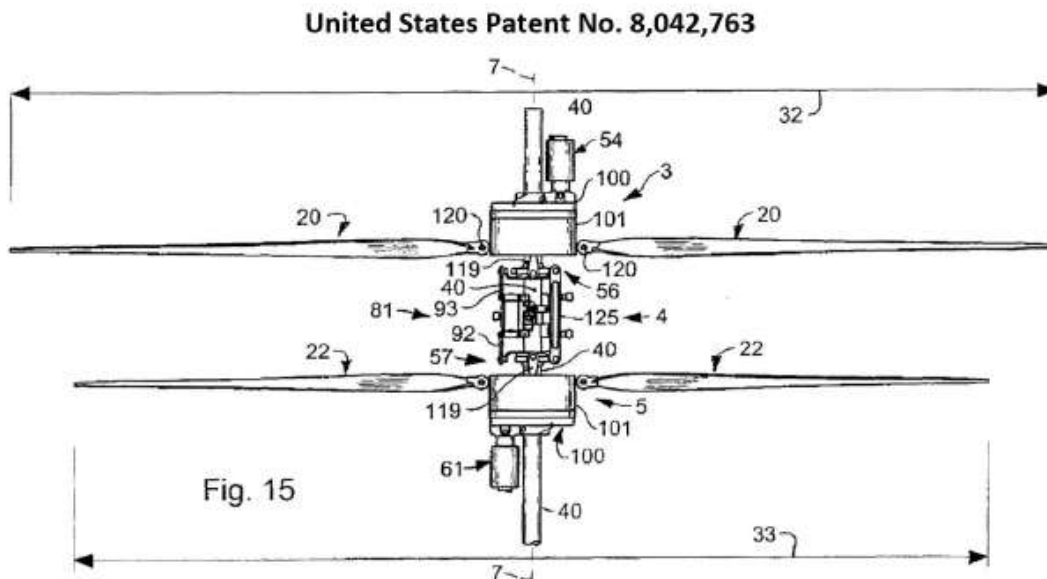


Fig. 3 Rotor System, including the rotor blades and hubs, swashplates and control linkages, servos, propulsion motors, and main mast structure



The Mars Helicopter changed significantly as AeroVironment transitioned from its unflyable stick-like model to the Arltons'

patented technology, reflecting a departure from the original statement of work. Appx152, Appx497. Ultimately, in 2017—after trying unsuccessfully for two-and-a-half years to develop its own rotor control system and a working helicopter—AeroVironment abandoned its technology and copied the '763 patent to produce the Mars Helicopter Ingenuity that has flown on Mars for almost three years. Appx1079–1080, Appx152, Appx497.

C. The district court grants summary judgment based on AeroVironment’s invocation of Section 1498 and representations regarding commercial use of the Arltons’ technology.

The Arltons initiated this patent infringement litigation on August 17, 2020. Appx95. Approximately six months later in February 2021—and despite having resisted discovery⁴—AeroVironment sought summary judgment on the basis of its alleged immunity from suit under 35 U.S.C. § 1498. Appx131. Simultaneously, the United States filed a “Statement of Interest” on behalf of the National Aeronautics and Space Administration

⁴ Aside from the production of its contracts with JPL (without attachments) on December 30, 2020, AeroVironment objected to the Arltons’ discovery requests. Appx420–422, Appx436–478, Appx502–510, Appx720.

(“NASA”), stating that the Government had granted AeroVironment the Government’s authorization and consent for AeroVironment’s use and manufacture of the inventions in the ’763 patent for the Mars Helicopter Ingenuity. Appx172.

In opposing this motion, the Arltons argued that the Government was not able to validly consent to patent infringement by AeroVironment because the Arltons had already licensed the ’763 patent to Lite for its SBIR work and Lite had the SBIR Phase III right to all follow-on work, including the Mars Helicopter. *See* Appx319–325, Appx328–334. The Arltons also sought discovery into the “who, what, where, when, and why” of the Government’s purported consent as well as other uses of their technology that would fall outside the scope of Section 1498. Appx334–339, Appx480–482. AeroVironment, however, refused to produce documents in response to the Arltons’ document requests, but stated that “to avoid wasting the parties’ and the Court’s time on this dispute we have confirmed that no AeroVironment products use a non-rotating main mast or equivalent structure, regardless of how those terms may be construed.” Appx504.

At the summary judgment hearing, the district court asked AeroVironment directly whether it had any plans to sell the accused technology to a party other than the Government. Appx756–757.

AeroVironment’s counsel responded:

I’m certainly not aware of any plans of that nature. The technology is the helicopter that is designed to fly on Mars. So, you know, it’s certainly not supported in the summary judgment record, but I would be surprised if that was going to be sold on any commercial market.

Id.

On April 22, 2021, the district court granted AeroVironment’s summary judgment motion, holding that under Section 1498 the Government is free to contract with whomever it chooses and to provide immunity accordingly. Appx10–11; *Arlton v. AeroVironment, Inc.*, No. 2:20-CV-07438-AB-GJS, 2021 U.S. Dist. LEXIS 80082 (C.D. Cal. Apr. 22, 2021). The district court also rejected the Arltons’ argument that Lite’s SBIR rights precluded the Government from consenting to patent infringement because “the Government was not obligated to contract with Lite.” Appx13. In addition, given AeroVironment’s representation to the Arltons and the district court that the only use of the Arltons’ technology was a single helicopter flying on Mars, the

district court determined that the Arltons' request for discovery into other uses of their technology was "the object of pure speculation." Appx14 (citations omitted). On May 12, 2021, the court entered judgment in favor of AeroVironment. Appx997–998.⁵

D. AeroVironment introduces "Terry" on national television, leading the district court to vacate its summary judgment decision.

Just three days before the district court entered judgment on its order granting summary judgment, AeroVironment "appeared in a 60 Minute segment with Anderson Cooper and introduced 'Terry,' a terrestrial version of the Mars Helicopter Ingenuity that is manually controlled by a pilot with a hand controller." Appx788, Appx18; *Arlton v. AeroVironment, Inc.*, No. 2:20-CV-07438-AB-GJS, 2021 U.S. Dist. LEXIS 208741, at *7 (C.D. Cal. June 24, 2021). Contradicting its prior statements to the district court, AeroVironment publicly stated its

⁵After the district court dismissed the Arltons' patent infringement claim, they asserted their patent claim under Section 1498 as a new count in their case with Lite already pending in the Court of Federal Claims. Although the Government has purportedly consented to liability, Appx172–178, it has moved to dismiss the Arltons' patent infringement claims (as well as Lite's SBIR and contract claims) in the Court of Federal Claims. To date, no patent infringement claim has been permitted to move forward.

intention in a press release “to use the technology developed through the Ingenuity project in commercial applications.” Appx21; *see also* Appx788–789.

In light of the nondisclosure of AeroVironment’s future plans to use the Arltons’ technology commercially as its own, including as embodied in Terry—admittedly a carbon copy of AeroVironment’s infringing Mars Helicopter Ingenuity—the Arltons sought to vacate the summary judgment order and reopen the matter for full discovery. Appx773–774, Appx788–791, Appx18, Appx21 (citing Ingenuity Press Event). Seeking to avoid vacatur, AeroVironment argued that Terry was irrelevant because it, too, was encompassed by Section 1498. Appx979–980. AeroVironment not only argued that Section 1498 covered Terry as the “Earth version” of the Mars Helicopter, but also submitted a declaration from Keennon, its chief engineer and technical lead for the Mars Helicopter. Appx989. Keennon stated that AeroVironment built Terry to “meet JPL and NASA’s needs” and that JPL “suggested that AeroVironment invest its independent research and development (‘IR&D’) funds [into Terry].” Appx990–991. According to Keennon, “The *only* intended use for the technology

embodied on Ingenuity and Terry is [] for the United States Government use in future space exploration programs.” Appx991 (emphasis added). AeroVironment also argued that because it had just completed Terry on April 11, 2021 (16 days *after* the hearing on the motion to dismiss), its statements to the district court regarding other uses of the Arltons’ technology had not been “factually incorrect.” Appx986.

The district court was not persuaded by AeroVironment’s arguments and vacated its judgment, concluding that Terry constituted newly discovered evidence. Appx21; *see also* Appx38. But the court did not permit the full discovery the Arltons sought. Appx21. Instead, the district court ruled that the Arltons could only conduct discovery into whether AeroVironment intended “to sell the ‘Terry’ helicopter or other helicopters commercially.” *Id.* In addition, the district court concluded that, “[t]he ‘Terry’ helicopter was developed as part of the Mars Ingenuity helicopter program and thus is covered under the government’s same broad grant of authorization and consent that the Mars Ingenuity helicopter received.” *Id.* Therefore, unless the Arltons could show a sale or other “substantial”

commercial use, the district court indicated it would reaffirm the summary judgment ruling. *Id.*

E. Discovery reveals AeroVironment’s substantial use of the Arltons’ patented technology.

The discovery that followed vacatur not only confirmed that Terry infringed the Arltons’ patent, but also revealed that AeroVironment’s widespread use of Terry was anything but *only* “for the United States Government.” Appx991, Appx1087–1294, Appx1447–1592. Moreover, AeroVironment was focused on potential uses of the Arltons’ technology for future commercial, non-governmental applications. Appx1577, Appx1590–1591.

For example, AeroVironment’s CEO, Mr. Wahid Nawabi, voiced his intention to apply the technology of the Mars Helicopter “to future programs and future innovations and creations of our teams and our customers.” Appx779, Appx788. And, on May 6, 2021, Keennon floated the idea of inviting Elon Musk to AeroVironment to demonstrate Terry as a means to elicit future interest in AeroVironment’s helicopters. Appx1134-1138, Appx1492–1496. Moreover, despite the Court’s vacatur of the summary judgment decision, AeroVironment continued to discuss internally its plans for

commercial applications of the Mars Helicopter technology. Appx1545–1563, Appx1565–1588.

Discovery further revealed that, over the course of 2021 and 2022, AeroVironment demonstrated Terry on multiple occasions, including, *inter alia*, on *60 Minutes with Anderson Cooper*, for a representative of UP Partners, at the Wright Brothers National Memorial, and at Syracuse University. Appx788, Appx18, Appx1235–1248, Appx1475–1476, Appx1497–1504, Appx1517, Appx1538. AeroVironment also displayed Terry at a conference of the Association for Unmanned Vehicle Systems International (“AUVSI”). Appx1148–1150, Appx1505–1507, Appx1530–1535.⁶

Further, AeroVironment’s technical lead, volunteered at his deposition that Terry was, in fact, his idea. Appx1096.⁷ When asked about Terry’s purpose, Keennon testified:

⁶ And, to this day, AeroVironment continues to showcase Terry *bearing an AeroVironment logo* in operation on its website. *See, e.g.,* <https://www.avinc.com/maccready-works/mars-helicopter> at 0:11 (last visited Dec. 28, 2023).

⁷ This testimony contradicted Keennon’s earlier declaration in which he stated that Terry was JPL’s idea and solely for Government use. Appx990–991.

[T]he primary purpose was to have a *marketing* visual aid that we could use to promote AeroVironment’s capabilities, you know, technical capabilities.

Appx1096, Appx1454 (emphasis added). Keennon also mentioned that Terry might become a “good product of some sort” Appx1096–1097, Appx1454–1455.

In brief, discovery showed that, since the completion of the infringing Terry product on April 11, 2021, AeroVironment has engaged in widespread marketing and use of Terry for commercial purposes.

F. Despite AeroVironment’s uses of the patented technology, the district court affirms summary judgment under Section 1498.

In granting summary judgment a second time, the district court concluded that the Arltons had failed to “show that Defendant sold or offered to sell these helicopters commercially, or otherwise used them commercially in a substantial way.” Appx26; *Arlton v. AeroVironment, Inc.*, No. 2:20-CV-07438-AB-GJS, 2023 U.S. Dist. LEXIS 143827 (C.D. Cal. Aug. 15, 2023). Although the Arltons demonstrated that Terry was neither manufactured for the Government nor used for the Government when AeroVironment repeatedly displayed it at trade shows and flew it

at press events, the district court nevertheless discounted many of AeroVironment's actions as "related to" protected activity. Appx28. This was consistent with the district court's earlier factual determination that Terry "was developed as part of the Mars Ingenuity helicopter program and thus is covered under the government's same broad grant of authorization and consent that the Mars Ingenuity helicopter received." Appx21. The district court deemed the remaining activities the Arltons enumerated either "*de minimis*" or "non-actionable," emphasizing the lack of a sale or offer for sale of the Arltons' technology. Appx28–29. Furthermore, "[b]y arguing that these activities fall outside the scope of § 1498," the district court reasoned, the Arltons were advocating for a "gag order" that the court "declines to impose." Appx28.

G. The district court also denies the Arltons' motion to amend.

At the time they initiated this lawsuit, the Arltons—in their considered opinion—lacked sufficient information to support a trade secrets claim against AeroVironment. Appx629. But as detailed below, they sought discovery into AeroVironment's activities and, promptly upon learning of the theft of their trade secrets, sought to

hold AeroVironment accountable for such theft by amending their complaint.

Just two days after they were permitted to do so under Federal Rule of Civil Procedure 26(f), the Arltons served document requests on AeroVironment. Appx628. On December 30, 2020, AeroVironment for the first time produced substantial contractual documents, but no technical documents. *Id.* The documents produced were all designated “Highly Confidential” and, as such, could not be reviewed by the Arltons directly. Appx628–629. Nevertheless, on or about January 31, 2021, in consultation with counsel, the Arltons discovered AeroVironment’s theft of their trade secrets. Appx629.

After due consideration and investigation of their new claims—and within three weeks of discovering AeroVironment’s misdeeds—the Arltons advised AeroVironment of their intent to seek leave to file a motion to assert theft of trade secrets pursuant to California State law and the Defend Trade Secrets Act (“DTSA”). Appx629, Appx669. At the same time, the Arltons notified AeroVironment regarding their intent to add Lite as a party because Lite is the licensee of the

relevant trade secrets. Appx670–671. The Arltons further requested a conference with counsel to take place within five business days. *Id.*

On February 26, 2021, as required by C.D. Cal. Local Rule 7-3, the parties met and conferred regarding the proposed filing. Appx673. AeroVironment stated that it would oppose the Arltons’ motion as belated because, among other things, the Arltons waited a month from the production of the new documents and until after AeroVironment had filed a motion for summary judgment⁸ to bring this issue forward. Appx673. AeroVironment also purportedly sought “to better understand the issues” related to its expected opposition. On March 18, 2021, AeroVironment followed up on a request for a copy of the proposed complaint to avoid “brief[ing] correctable issues to the court.” Appx674. The Arltons provided AeroVironment their proposed pleading the very next day. Appx630, Appx676–677. On March 22, 2021, the Arltons filed their motion to amend. Appx610. In

⁸ On February 16, 2021, AeroVironment filed its motion for summary judgment. Even though the Arltons were on notice of AeroVironment’s intent to file the motion, they were surprised by the timing of the motion because AeroVironment did not schedule a conference as required by the Cal. C.D. Local Rule 7-3 to discuss the motion before filing it.

other words, only four days passed between AeroVironment's last communication seeking to narrow the dispute between the parties and the filing of the Arltons' motion to amend.

The district court nonetheless ruled that the Arltons were not diligent in seeking leave to amend and, accordingly, denied the Arltons' motion. Appx15. Among other things, the district court noted that the Arltons "did not start contemplating seeking leave to amend until about January 31, 2021, which Plaintiffs admit was after the January 2021 deadline to file a motion for leave to amend" and "Plaintiffs did not seek leave to amend until nearly two months after this date on March 22, 2021." Appx15. The district court also criticized the Arltons for seeking leave after the summary judgment motion was fully briefed, even though the deadline for dispositive motions to be heard was still nine months away. Appx15, Appx130 (setting summary judgment hearing deadline as November 19, 2021). The district court failed to consider that the Arltons were unable to review the documents produced on December 30, 2020 in view of their "Highly Confidential" designation. The district court likewise failed to consider both (i) the Arltons' diligence in promptly notifying

AeroVironment of their trade secrets claims and (ii) their timely filing of the motion to amend only days after the meet and confer process concluded. The Arltons took these immediate steps all while immersed in responding to AeroVironment's early summary judgment motion.

SUMMARY OF ARGUMENT

In 2012, Congress passed what is now commonly known as the SBIR "Phase III Mandate." Pursuant to that mandate, "[t]o the greatest extent practicable, Federal agencies and Federal prime contractors *shall* . . . issue, without further justification, Phase III awards relating to technology, including sole source awards, to the SBIR and STTR award recipients that developed the technology." 15 U.S.C. § 638(r)(4) (2012) (emphasis added). Here, it is undisputed that the Arltons' company, Lite, was an SBIR Phase III award recipient, licensed the '763 patent from the Arltons, developed the Arltons' patented technology for the Government in its prior SBIR programs, and was working with the Air Force under a six-year sole-source SBIR Phase III contract during the relevant time period. As a result, NASA and JPL were obligated to award a contract to Lite for the Mars Helicopter Ingenuity "to the greatest extent

practicable.” Instead, they handed Lite’s SBIR work and the Arltons’ patented technology to AeroVironment and then purportedly consented to AeroVironment’s willful patent infringement pursuant to 28 U.S.C. § 1498.

In granting summary judgment in favor of AeroVironment, the district court misinterpreted the SBIR statute, misapplied this Court’s case law, and misconstrued the Government’s freedom of contract as absolute. Appx12–13 (relying on *Night Vision Corp. v. United States*, 68 Fed. Cl. 368, 381 (2005) and *TVI Energy Corp. v. Blane*, 806 F.2d 1057, 1060 (Fed. Cir. 1986)). These errors, individually and collectively, led the district court to conclude that—despite Lite’s SBIR Phase III right to follow-on work—“the Government was not obligated to contract with Lite.” Appx13. Because this conclusion cannot be sustained, the Court should reverse the district court’s recognition of the Government’s purported consent and hold that AeroVironment is not immune from suit under Section 1498.

Moreover, the district court erred in granting summary judgment a second time based on a flawed analysis of the “*de minimis*” exception. The district court’s application of the “*de minimis*” exception to cover non-

governmental, i.e., commercial, uses of the Arltons' technology—as well as to sweep in Terry as “related to” the Mars Helicopter Ingenuity project—is contrary to law. Appx28. The *de minimis* exception is exceedingly narrow, applying only to infringement undertaken “for amusement, to satisfy idle curiosity, or for strictly philosophical curiosity.” See *Embrex, Inc. v. Serv. Eng'g Corp.*, 216 F.3d 1343, 1349 (Fed. Cir. 2000). Not even AeroVironment describes its actions as such. In addition, this Court has never concluded that subsequent uses “related to” a Government project but in no way *for* the Government fall within the scope of Section 1498. Indeed, neither Section 1498 itself nor the Patent Act provides for such an exception. Both AeroVironment's construction of Terry as a marketing tool and its widespread demonstrations of this infringing device were clear, non-*de minimis* commercial uses. Accordingly, the district court's grant of summary judgment as to these activities also was error and must be reversed.

Lastly, the district court erred in denying the Arltons' motion to amend to add trade secret claims and Lite as a plaintiff when, by any measure, their motion was pursued diligently. Only by affirmatively ignoring concerns under Federal Rule of Civil Procedure 11, the Local

Rules, and their confidentiality obligations could the Arltons have met the draconian standard imposed here. That standard essentially demanded that the Arltons bring claims before they were procedurally or substantively ripe. The district court abused its discretion by failing to consider these facts. In addition, the Arltons established good cause, namely, the schedule “[could not] reasonably be met despite the diligence of the party seeking the extension.” Fed. R. Civ. P. 16(b)(4) advisory committee’s notes to 1983 amendment.

STANDARD OF REVIEW

The Federal Circuit reviews questions of patent law *de novo*. *Madey v. Duke Univ.*, 307 F.3d 1351, 1358 (Fed. Cir. 2002). On procedural issues, the Federal Circuit follows the rule of the regional circuit, unless the issue is unique to patent law and therefore exclusively assigned to the Federal Circuit. *Id.* Determinations regarding 28 U.S.C. § 1498(a) and exceptions thereto are unique to patent law and therefore subject to *de novo* review. *See id.*

The Federal Circuit reviews summary judgment rulings under the law of the regional circuit, here the Ninth Circuit. *Adasa Inc. v. Avery Dennison Corp.*, 55 F.4th 900, 907 (Fed. Cir. 2022). The Ninth Circuit

“review[s] the district court’s grant of summary judgment de novo, determining whether, viewing all evidence in the light most favorable to the nonmoving party, there are any genuine issues of material fact and whether the district court correctly applied the relevant substantive law.” *Id.* (citing *Kraus v. Presidio Tr. Facilities Div./Residential Mgmt. Branch*, 572 F.3d 1039, 1043–44 (9th Cir. 2009)). “The evidence of the non-movant is to be believed, and all justifiable inferences are to be drawn in his favor.” *Anderson v. Liberty Lobby, Inc.*, 477 U.S. 242 (1986).

On procedural issues not unique to its exclusive jurisdiction, including motions for leave to amend, the Federal Circuit applies the procedural law of the regional circuit. *Regents of the Univ. of New Mexico v. Knight*, 321 F.3d 1111, 1123 (Fed. Cir. 2003). The Ninth Circuit reviews a district court’s denial of a motion for leave to amend a complaint under the abuse of discretion standard. *Bowles v. Reade*, 198 F.3d 752, 757 (9th Cir. 1999); *see also United States v. Meyers*, 847 F.2d 1408, 1411 (9th Cir. 1988) (holding that evidentiary rulings are reviewed for abuse of discretion). A district court’s “clearly erroneous finding of fact,” including when based on the failure to consider relevant facts, constitutes an abuse of discretion. *See Millenkamp v. Davisco Foods Int’l*,

Inc., 448 F. App'x 720, 721 (9th Cir. 2011) (citing *Gonzales v. Free Speech Coalition*, 408 F.3d 613, 618 (9th Cir. 2005)); *see also La Quinta Worldwide LLC v. Q.R.T.M., S.A. de C.V.*, 762 F.3d 867, 880 (9th Cir. 2014) (finding abuse of discretion where district court ignored relevant fact); *Simpson v. Evans*, 525 F. App'x 535, 536 (9th Cir. 2013) (finding that movant failed to act diligently constitutes an abuse of discretion because district court failed to consider time spent exhausting his claim in state court, which was required).

ARGUMENT

I. The district court erred in holding AeroVironment immune from suit under 28 U.S.C. § 1498.

As an affirmative defense, Section 1498 relieves a third party from patent infringement liability and acts as a waiver of sovereign immunity (and, thus, constitutes consent to liability) by the United States. *See Madey*, 307 F.3d at 1359. The statute provides:

[w]henever an invention described and covered by a patent of the United States is used or manufactured by or for the United States without license of the owner thereof or lawful right to use or manufacture the same, the owner's remedy shall be by action against the United States in the United States Court of Federal Claims for the recovery of his reasonable and entire compensation for such use and manufacture.

28 U.S.C. § 1498 (emphasis added).

Although it is undisputed that AeroVironment made the Mars Helicopter on behalf of the Government, this fact alone cannot resolve the question of whether AeroVironment's defense is viable under 28 U.S.C § 1498. Only where an entity (i.e., not the United States) uses or makes the invention "with the authorization and consent of the Government," shall such use "be construed as use or manufacture for the United States." *Id.* Thus, to escape liability, a party asserting a Section 1498 defense must demonstrate that its use or manufacture is both "for the Government" *and* with the "authorization and consent of the Government." *Madey*, 307 F.3d at 1359.⁹

Here, in finding that AeroVironment satisfied its burden to make that showing, the district court erred, which gives rise to both immediate and wide-spread consequences. Not only does the district court's conclusion contravene the Phase III Mandate embodied in the SBIR statute, it perpetuates a legal error made by the Court of Federal Claims

⁹ Section 1498 was designed originally "to stimulate contractors to furnish what was needed for the War, without fear of becoming liable themselves for infringements to inventors or the owners or assignees of patents." *Richmond Screw Anchor Co. v. United States*, 275 U.S. 331, 345 (1928).

in *Lite Machines Corp. v. United States*, 143 Fed. Cl. 267 (2019). Moreover, according to the district court, the Government’s ability to protect a willful infringer and invoke Section 1498 is limitless—even when the Government has pre-existing obligations under the SBIR statute and even when the patent at issue has already been licensed to another government contractor under a sole-source SBIR Phase III contract for essentially the same work. This decision undermines the long-established rights of small business owners, entrepreneurs, and innovators, and, in so doing, subverts the Small Business Administration (“SBA”) and the SBIR statute itself.

A. The Government cannot provide its consent to AeroVironment’s infringement as a matter of law.

i. The Phase III Mandate imposes SBIR obligations on the Government.

In concluding “the Government was not obligated to contract with Lite,” Appx13, and thus that it could consent to AeroVironment’s patent infringement, the district court disregarded the Phase III Mandate.

As a threshold matter, there is no dispute that the Mars Helicopter program is an SBIR Phase III program under the SBIR statute (15 U.S.C. § 638). The SBIR statute defines SBIR Phase III

work as work that derives from, extends, or completes an effort made under prior SBIR/STTR funding agreements, but is funded by sources other than the SBIR/STTR programs. 15 U.S.C. § 638(E)(6)(C). Because the Mars Helicopter Ingenuity incorporates the technology (i) claimed in the '763 patent and (ii) included in Lite's SBIR Phase III research project involving the helicopter scientists at NASA Ames, the Mars Helicopter Ingenuity derives from, extends, and completes work done by Lite under prior SBIR-funded efforts for the Tiger Moth UAV. Appx365. Nor has AeroVironment disputed that the Mars Helicopter program was also funded by sources other than the SBIR/STTR programs. Moreover, Lite was negotiating "with the Air Force for three new SBIR Phase III research, development, and commercialization contracts that included the Mars Helicopter" up until February 2016, when AeroVironment delivered the Mars Helicopter prototype to JPL and Lite was informed there was no further funding for the Tiger Moth UAV or follow-on work. Appx107, Appx362–363. Given that NASA itself purported to authorize and consent to AeroVironment's use of the '763 patent for the Mars Helicopter Ingenuity, the Mars Helicopter program meets all the

criteria of 15 U.S.C. § 638 and is an SBIR Phase III program that utilizes technology developed by Lite based on the Arltons' patented invention. See Appx149, Appx172.

There is also no question that Phase III rights were intended to be, and are, legally significant. As enacted in 2012, Section 638(r)(4) expressly includes the following requirement: “[t]o the greatest extent practicable, Federal agencies and federal prime contractors *shall issue . . . Phase III awards relating to technology*, including sole source awards, *to the SBIR . . . award recipients that developed the technology.*” (emphasis added). This directive is a legislative mandate.

As the SBIR Data Rights Tutorial explains:

Another valuable Phase III right is what is known as the “*Phase III mandate.*” This *mandate* states that a Phase III *must* be awarded to the SBIR or STTR developer to the greatest extent practicable It would seem it would almost never be possible to justify why it is not “to the greatest extent practicable” to award continuation of the technology to the firm that first invented it.

Appx1855 (emphasis added). The SBA also recognizes the compulsory nature of 15 U.S.C. § 638(r)(4), calling it a “mandate.” According to the SBA:

This provision addresses the concern that, at times, agencies have failed to use this authority, bypassed the small business

that created the technology, and pursued the Phase III work with another business rather than actively supporting and encouraging the commercialization or further development of SBIR/STTR technology by the innovative small business that developed the technology.

...

Notwithstanding the *strong congressional mandate* codified in statute, SBA continues to hear from small businesses, agencies and trade groups that SBIR/STTR Awardees do not receive Phase III awards.

See SBIR/STTR Notice of Proposed Amendments, 81 Fed. Reg. No. 67 (20487) (Apr. 7, 2016) (emphasis added). Indeed, only in exceptional circumstances—where it is completely infeasible (i.e., *not* “to the greatest extent practicable”) to issue an award for follow-on work to the SBIR awardee that developed the technology—will the Government be free to issue an award to another entity. Indeed, it is a well-known tenet of statutory construction that “shall” means what it says. *Lexecon, Inc. v. Milberg Weiss Bershad Hynes & Lerach*, 523 U.S. 26, 35 (1998) (“The mandatory ‘shall’ . . . normally creates an obligation impervious to judicial discretion.”) (citations omitted).

Given the clear mandate codified in 15 U.S.C. § 638(r)(4), the Government was bound by law to award the Phase III Mars Helicopter

program to Lite. Accordingly, the district court's conclusion to the contrary is wrong.

ii. The district court erred in finding that the Government has no SBIR obligations to Lite or the Arltons.

Indeed, the district court premised its summary judgment ruling on the same flawed legal analysis previously applied by the Court of Claims in *Lite Machines Corp. v. United States*, 143 Fed. Cl. 267 (2019). See Appx12 (finding the reasoning in *Lite Machines* “persuasive”).¹⁰ There, the Court of Claims concluded that Lite could not state a claim for relief because the SBIR Statute “does not require that the government award a Phase III contract to a recipient of a Phase I or Phase II SBIR award under which the relevant technology was developed.” 143 Fed. Cl. at 283 (cited at Appx12). This conclusion is built on the incorrect premise that

¹⁰ AeroVironment falsely characterized Lite's argument in the Court of Federal Claims as follows: “Lite Machines alleged that the [SBIR] statute and policy directive required the Air Force to award to [sic] a contract to Lite Machines, instead of AeroVironment, based on Lite Machine's successful completion of certain SBIR Phase I and Phase II contracts.” Appx515. In reality, Lite never made this argument. In the time period at issue Lite had already completed a Phase III contract and was currently working under another Air Force Phase III contract. AeroVironment mischaracterized Lite's argument in an unfounded attempt to fit Lite's claim into the facts of *Night Vision*.

because there is no requirement to award a Phase III contract under Section 638(e)(4)(c), the Government may contract with whomever it pleases. Here, too, the district court concluded that because the Government “may” enter into a Phase III Agreement with a business concern that has completed a Phase II contract, there is no Phase III mandate. Appx12. But this conclusion applies the same faulty logic and ignores the plain language of the statute in violation of well-known rules for statutory construction. As discussed above, the Government is under no obligation to award an SBIR Phase III contract at all, but *if it decides to do so* then that contract *must* be awarded to the small business concern *that developed the technology*. See *supra* at 31–35; see also SBIR/STTR Notice of Proposed Amendments, 81 Fed. Reg., No. 67 (20487) (Apr. 7, 2016) (“[I]f the government is interested in pursuing further work that was performed under an SBIR or STTR award, the government must, to the *greatest* extent practicable, pursue that work with the SBIR or STTR awardee that performed the earlier work.”) (emphasis in original).

The district court compounded its error by relying on this Court’s decision in *Night Vision Corp. v. United States*, 68 Fed. Cl. 368, 381 (2005), which is inapposite. There, the Court held that the SBIR

statute imposes “no duty on the government to award a Phase III contract to a concern that successfully completes a Phase II contract.” Appx12 (quoting *Night Vision*, 469 F.3d at 1374). While the district court below accurately recited *Night Vision*’s non-controversial holding, that decision does not speak to the Phase III Mandate at issue here. First, in *Night Vision*, the small business concern was *not* a Phase III award recipient. 469 F.3d at 1373; *see also id.* at 1374–75 (holding only that “[Section] 638 imposes no duty on the government to award a Phase III contract to a concern that successfully completes a Phase II contract.”). Second, the Phase III *Mandate*, which Congress enacted in 2012, did not exist in 2005 when this Court rendered its decision in *Night Vision*. This Court analyzed an altogether different section [Section 638(j)(2)(C)] of the SBIR statute. That section relates to “procedures” to be developed to ensure further agreements with SBIR awardees and does not confer rights to small business concerns. Unsurprisingly, the Court could find no obligation on the part of the Government to contract with Night Vision based on Night Vision’s successful completion of either a Phase I or Phase II contract. Simply put, *Night Vision* does not speak to the facts or the law at issue here.

Nevertheless, the district court focused on the permissive “may” language of Section 638(r)(1)—which is inapplicable—and found the freedom of contract argument that governed in *Night Vision* to be persuasive here. Appx12. It held:

The Federal Circuit reasoned that [imposing a duty on the government to award a Phase III contract to the party who completes the Phase II contract] “would seriously limit the government’s ability to select the form of procurement that it considers most appropriate in the particular situation.” The same reasoning applies here.

Appx12–13 (citations omitted). In sum, the district court improperly conflated “*may*,” on the one hand, with “*shall . . . issue Phase III awards . . . to the . . . SBIR . . . award recipients that developed the technology,*” on the other hand. Consequently, the district court concluded that Section 638(r)(4) does not mean what it says, but was instead “aimed at *encouraging* but not requiring, an agency to seriously consider awarding a contract to the developer of the technology in the context of a SBIR Phase III award” Appx12 (emphasis added). This conclusion is incorrect.

B. The district court’s conclusion that Section 1498 supersedes the Phase III Mandate is error.

It is a matter of first impression before this Court as to whether

SBIR rights yield in the face of Section 1498. The district court concluded that they must, holding that “[Section] 1498 was enacted to give the Government the freedom to contract with whomever it chooses in order to procure goods or services while providing immunity to those contractors.” Appx11. Furthermore, according to the district court, the Government may decide between competing policy interests and “the Court will not question the Government’s decision to choose one policy [Section 1498] over another [the SBIR Phase III Mandate].” *Id.* In so ruling, the district court not only ignored the Phase III Mandate, it cast aside the foundational policy of the SBIR statute.

The SBIR statute is intended to promote innovation by small businesses. The SBA has specifically chastised agencies that pursue Phase III work with entities other than those small businesses that developed the technology.¹¹ According to the SBA, “[t]his unfortunate situation not only robs small businesses of revenues, but it also results in expensive legal costs for businesses to protect their data rights.”¹² This

¹¹ See <https://www.federalregister.gov/documents/2019/04/02/2019-06129/small-businessinnovation-research-program-and-small-business-technology-transfer-program-policy>.

¹² *Id.*

is exactly what has happened here. While the district court focused heavily on the burden to contractors as a policy consideration under Section 1498, it failed to consider the deleterious effects of its decision on small business concerns in the SBIR program and the chilling effect on innovation.

The district court's elevation of contractor rights under Section 1498 over the rights of SBIR awardees is both unsupported and unjust. Congress designed Section 1498 to support war-time exigencies early in the 20th century, yet, according to the district court, there are no protections for SBIR awardees against broad application of Section 1498 for any reason whatsoever.

Admittedly, this Court, too, has construed Section 1498 broadly "so as not to limit the Government's freedom in procurement by considerations of private patent infringement." *TVI Energy*, 800 F.2d at 1060. But such broad application of Section 1498 cannot be reconciled with the current SBIR statute. In fact, the district court's agnostic application of the Government's freedom of contract ignored both the facts of this case and statutory guidance. The natural, immediate consequence of the district court's decision is that the Government's

freedom to contract vitiates the mandate of the SBIR. But Congress strengthened 15 U.S.C. § 638(r)(4) in 2012 to create the Phase III Mandate specifically because agencies were not awarding Phase III contracts to small businesses. *See, e.g.*, SBIR/STTR Notice of Proposed Amendments, 81 Fed. Reg. No. 67 (20487) (Apr. 7, 2016). Thus, Congress consciously limited the Government’s freedom of procurement *in certain limited situations involving SBIR awardees*. And according to the SBIR Policy Directive, “no agency may apply policies, directives, or clauses that contradict, weaken, or conflict with the policy as stated in the directive.”¹³ Presumably, Congress and the SBA were fully aware of Section 1498 (an artifact of World War I) at the time they penned these words, and did not write the mandate only to have the courts render it meaningless.

* * *

The Phase III Mandate is just that—a mandate. The district court erred in concluding otherwise based on (i) case law that is either legally wrong (*Lite Machines*) or inapposite (*Night Vision*) and (ii) an

¹³ *See* <https://www.federalregister.gov/documents/2019/04/02/2019-06129/small-businessinnovation-research-program-and-small-business-technology-transfer-program-policy>.

inappropriately broad application of Section 1498 that cannot be reconciled with the SBIR statute.

II. The district court erred in applying the *de minimis* doctrine to bar claims against AeroVironment.

Despite AeroVironment’s widespread, commercial use of Terry, the district court held that such uses were *de minimis* as a matter of law. Drawing on Section 1498 cases, the salient point for the district court was, wrongly, whether there had been “offers for sale or commercial sales of the accused technology.” Appx29 (also relying on *BAE Sys, Info. & Elec. Sys. Integration, Inc. v. Aeroflex*, No. CIV. 09-769, 2011 WL 3474344, at *12 (D. Del. Aug. 2, 2011)). Indeed, the district court expressly held that its initial summary judgment ruling would be maintained *unless* the Arltons could show that AeroVironment “sold or offered to sell th[e] helicopters commercially, or otherwise used them commercially in a substantial way.” Appx21. But this Court has never endorsed a *de minimis* use exception of the nature and scope advocated for by AeroVironment and adopted by the district court. To the contrary, this Court has repeatedly confirmed the narrowness of this exception as it relates to 35 U.S.C. § 271.

A. The *de minimis* doctrine provides a narrow exception to patent infringement.

The *de minimis* use doctrine is exceedingly narrow. See *Embrex*, 216 F.3d at 1349. In fact, Judge Rader has remarked that, “[b]ecause the Patent Act confers the right to preclude ‘use,’ not ‘substantial use,’ no room remains in the law for a *de minimis* excuse.” *Id.* at 1352 (Rader, J., concurring). Nonetheless, in the context of Section 1498, district courts have invoked a *de minimis* use exception that strays markedly from this Court’s precedent. The Court should now confirm that its prior holdings on *de minimis* use as it relates to 35 U.S.C. § 271 apply equally to 15 U.S.C. § 1498.

Because Section 271(a) “prohibits, on its face, any and all uses of a patented invention,” only a narrow defense covering infringement “performed ‘for amusement, to satisfy idle curiosity, or for strictly philosophical inquiry’” will escape the reach of the Patent Act. *Embrex*, 216 F.3d at 1349 (quoting *Roche Prods., Inc. v. Bolar Pharm. Co.*, 733 F.2d 858, 861 (Fed. Cir. 1984), *superseded on other grounds by statute*, 35 U.S.C. § 271(e) (1994)). Infringement, in other words, is *de minimis* only if it has no commercial value or purpose. “The level of infringement is a question of damages, not liability.” *Trading Techs. Int’l, Inc. v. eSpeed*

Inc., No. 04 C 5312, 2007 U.S. Dist. LEXIS 12965, at *21–22 (N.D. Ill. Feb. 21, 2007), *aff'd* 595 F.3d 1340 (Fed. Cir. 2010) (citing *Embrex*, 216 F. 3d at 1352–53 (Rader, J., concurring)). And, in keeping with *Embrex*, various district courts have followed this Court’s narrow application of the *de minimis* doctrine and concluded that a single act of infringement suffices to establish liability. *See, e.g., Days Corp. v. Lippert Components, Inc.*, 558 F. Supp. 3d 689, 699–700 (N.D. Ind. 2021) (noting that the *de minimis* exception is “a thin one” limited to infringement performed for “amusement,” “idle curiosity,” or “philosophical inquiry”); *Edwards Lifesciences Corp. v. Meril Life Scis. Pvt. Ltd.*, No. 4:19-cv-06593-HSG, 2020 U.S. Dist. LEXIS 27308, at *10 (N.D. Cal. Feb. 18, 2020) (“[E]ven a single act of infringement suffices for Edwards to seek damages against the Defendants, even if that act is commercially minor and not likely to repeat in the future.”); *Largan Precision Co. v. Genius Elec. Optical Co.*, 86 F. Supp. 3d 1105, 1116 (N.D. Cal. Mar. 31, 2015) (noting “very narrow” construction of *de minimis* exception); *see also Baxter Diagnostics v. AVL Sci. Corp.*, 924 F. Supp. 994, 1016 (C.D. Cal. 1996) (holding that the *de minimis* exception does not apply to acts committed with a business interest in mind).

District courts, however, inexplicably have expanded the *de minimis* exception in connection with the assertion of a Section 1498 defense. As a result, in this context, some district courts have tolerated infringing activities that go well beyond those motivated by “idle curiosity” (i.e., activities that are not *de minimis*). *See, e.g., St.-Gobain Ceramics & Plastics, Inc. v. II-VI Inc.*, 369 F. Supp. 3d 963, 981 (C.D. Cal. 2019) (disregarding production of single product for industry trade show and for website and deeming such production and display *de minimis* infringement) (and citing cases); *Hutchinson Indus. Inc. v. Accuride Corp.*, No. CIV A 09-1489 FLW, 2010 U.S. Dist. LEXIS 30527, at *5 & n.12 (D.N.J. Mar. 30, 2010) (finding responses to sales quotes insufficient to overcome Section 1498 defense); *Raymond Eng’g Inc. v. Miltope Corp.*, No. 85 CIV. 2685 (RWS), 1986 U.S. Dist. LEXIS 25135, at *11–13 (S.D.N.Y. May 23, 1986) (dismissing where no non-governmental sales were shown and ignoring display at trade shows). The contortion of the *de minimis* standard is exemplified here by the district court’s myopic focus on the absence of a commercial sale. *See, e.g., Appx29* (holding that “Plaintiffs have failed to show any offers for sale or commercial sales of the accused technology”). This focus allowed Section 1498 to be extended

to cover acts that are not for the Government and that would otherwise constitute infringement under the Patent Act. As such, the decision of the district court—like the holdings from other district courts—represents an unwarranted and unsupported departure from this Court’s precedent.

Neither the reasoning in nor holding of *Medical Solutions, Inc. v. Change Surgical LLC*, 541 F.3d 1136 (Fed. Cir. 2008)—the sole decision from this Court cited by the district court below with regard to *de minimis* use—cures the district court’s error. Appx29. In *Medical Solutions, Inc.*, the Court concluded that the display of an allegedly infringing product at a trade show was not an act of infringement sufficient to establish personal jurisdiction. 541 F.3d at 1140–41. But this conclusion does not establish a broad *de minimis* exception for activity at trade shows. To the contrary, the Court cautioned that the “inquiry as to what constitutes a ‘use’ of a patented item is highly case-specific.” *Id.* at 1141. The Court then focused narrowly on whether there had been a “use” of the claimed method. *Id.* at 1141 n.3. It concluded there had been no “use” because the mere display of a prototype “f[e]ll short of practicing all of the elements of any one” of the method claims asserted. *Id.* at 1141. In contrast, the ’763 patent recites *device* claims and AeroVironment infringed all of the

elements of claim 1 simply by making Terry. *See* 35 U.S.C. § 271 (defining patent infringement as occurring whenever one without authority “makes, uses, offers to sell, or sells any patented invention”). AeroVironment’s subsequent display and use of Terry only demonstrates that its earlier act of infringement was, in fact, commercial in nature. *See infra* at 48–51.

At bottom, there is no legal basis for differentiating *de minimis* use under Section 1498 from *de minimis* use under the Patent Act. Unless the use is the merest trifle—such as for “amusement”—a claim for infringement lies.¹⁴

B. The *de minimis* exception is not applicable to AeroVironment’s non-governmental use of Terry.

As explained above and confirmed by the facts of record, AeroVironment’s display, use, and promotion of Terry was not “for amusement, to satisfy idle curiosity, or for strictly philosophical inquiry.” Rather, AeroVironment’s creation and use of Terry allowed

¹⁴ Whether or not the Government can excuse AeroVironment’s use of the Arltons’ patent for Terry is an altogether separate inquiry. Here, the Government has submitted no statement of interest consenting to Terry. The only consent purportedly given relates to AeroVironment’s earlier work on the Mars Helicopter Ingenuity. Appx172–178.

AeroVironment to attach its name to an invention that is not its own and to use that invention to derive commercial value and attract commercial customers to AeroVironment at the Arltons' expense. After the court vacated its summary judgement holding, AeroVironment produced over 160,000 pages of documents, including hundreds of documents associated with wide-ranging, non-government uses for Terry as well as a plan to leverage the Arltons' technology for private space exploration and other commercial opportunities.

Also as noted above, the manufacture of Terry is actionable and compensable in and of itself. But AeroVironment did not stop there. It immediately put Terry—and with it the Arltons' technology—into service on *60 Minutes with Anderson Cooper*. Appx18. It is hard to overstate the commercial value that AeroVironment derived by demonstrating Terry to CBS's national audience. That AeroVironment, by its own admission, rushed to completed Terry just two days before filming the *60 Minutes* episode suggests that this promotional opportunity was of immense value to AeroVironment. Appx991. Moreover, AeroVironment did not merely build a Mars Helicopter mock-up or simply display Terry on *60 Minutes* and then stow it away. AeroVironment continued to demonstrate and/or

display Terry on various occasions to build brand recognition thereby reaping the value of the Arltons' invention, including at the Association for Unmanned Vehicles Systems International ("AUVSI"), the Wright Brothers National Memorial, and Syracuse University, among others mentioned by the district court. Appx27. These high-value, high-profile public promotions of Terry at industry events constitute commercial uses of the Arltons' patented invention that were entirely unnecessary for, and disassociated from, AeroVironment's work for the Government. When these public promotions are set against the backdrop of AeroVironment's private interactions with SpaceX, UP Partners, and Impulse Space it becomes clear that Terry's primary purpose is marketing and business development—not government-sponsored space science. Appx26–27. AeroVironment's internal communications and strategic plans corroborate this conclusion. Appx27. The district court, however, waved off each of the foregoing, detailed in hundreds of pages (Appx1087–1294, Appx1447–1592), as either authorized uses of Terry as a "proxy" for the Mars Helicopter Ingenuity or *de minimis* because they did not involve a monetary transaction. Appx27–29.

Notably, AeroVironment itself confirmed the commercial purpose and value of these demonstrations. As Keennon testified, “The primary purpose [of Terry] was basically to have a *marketing* visual aid that we could use to *promote AeroVironment’s capabilities, you know technical capabilities.*” Appx1096 (emphasis added). But neither making Terry nor using it to market AeroVironment’s “technical capabilities” is protected by Section 1498. The *de minimis* exception does not apply where, as here, the acts are committed in furtherance of a commercial purpose. See *Baxter Diagnostics*, 924 F. Supp. at 1016 (citing *Baxter Diagnostics, Inc. v. AVL Scientific Corp.*, 798 F. Supp. 612, 620 (C.D. Cal. 1992)); *Roche Prods.*, 733 F.2d at 863; *Neff Instrument Corp. v. Cohu Elec., Inc.*, 269 F.2d 668, 673 (9th Cir. 1959) (noting infringement lies where only a single infringing device is manufactured, even if it is not sold).

Moreover, the district court’s concern that reining in AeroVironment with respect to Terry would constitute a “gag order” and inhibit potential contractors from working with the Government is unfounded and irrelevant. Appx28. Whether or not Terry is a “proxy” for Ingenuity (which it is not), restricting AeroVironment’s ability to discuss its work with the Government is neither the point of the Arltons’

complaints nor of import under patent law. Appx28. Terry is, quite simply, a non-*de minimis* infringement of the Arltons' patent. Under the Patent Act the Arltons are entitled to exclude AeroVironment from practicing their invention and to receive compensation for AeroVironment's infringement. *See* 35 U.S.C. § 271(a); 35 U.S.C. § 284 (requiring compensation "no less than a reasonable royalty rate for the use made of the invention by the infringer").¹⁵

* * *

Applying the correct standard, the district court must be reversed. In making and using Terry, AeroVironment engaged in substantial acts of infringement that are cognizable under the Patent Act. These acts were not for the Government and the Arltons have the right to seek recourse before the district court, including monetary damages,

¹⁵ AeroVironment has been awarded additional Government contracts that will involve additional infringement of the Arltons' '763 Patent. These contracts, too, run afoul of the Lite's SBIR rights to follow-on work. But even if this Court determines that Section 1498 supersedes competing SBIR rights, the Arltons are entitled to pursue Terry as an infringement so that the Government and AeroVironment are not encouraged to abuse the Arltons' patent rights—as they have clearly done and continue to do—beyond the scope of Section 1498.

injunctive relief, and a declaratory judgment.¹⁶

III. The district court abused its discretion in failing to permit the Arltons the opportunity to amend their complaint.

In denying the Arltons' motion to amend, the district court ignored that the Arltons could neither review the documents in question nor comply with the meet-and-confer requirements imposed by the Local Rules within the allotted timeframe. Moreover, the court blamed the Arltons for waiting to move until after AeroVironment sought summary judgment when, in fact, it was AeroVironment that dictated the timing of both its document production and early summary judgment motion. In neglecting these facts, the district court imposed a heightened standard on the Arltons, demanding that they demonstrate extreme diligence.¹⁷

¹⁶ The Arltons have the right to set the historical record straight by way of a declaratory judgment. Terry perpetuates and reinforces the public perception that AeroVironment's technology enabled the historic first flight on another planet, which NASA touts as "the Wright brother's moment for Mars." That credit is due the Arlton brothers, not AeroVironment. Notably, a declaratory judgment vis-à-vis AeroVironment is not available in the Court of Federal Claims. *See, e.g., NPD Research, Inc. v. United States*, 15 Ct. Cl. 113, 120 (Ct. Cl. 1988).

¹⁷ Extreme diligence is not required under Rule 16. *See Delux Pub. Charter, LLC v. Cnty. of Orange*, No. 8:20-cv-02344-JVS (KESx), 2022 U.S. Dist. LEXIS 240133, at * 10 (C.D. Cal. Mar. 2, 2022) (citation omitted).

This distortion of the “good cause” standard under Federal Rule of Civil Procedure 16, together with the clearly erroneous finding that the Arltons failed to exercise diligence, constitutes an abuse of discretion.¹⁸

A. Rule 16’s “good cause” standard demands only reasonable diligence.

Because they did not meet the scheduling order’s deadline for a hearing on a motion to amend the pleadings (i.e., February 12, 2021, Appx130), the Arltons were required to satisfy the “good cause” standard as set forth in Rule 16(b)(4). That Rule states that “[a] schedule may be modified only for good cause and with the judge’s consent.” *Yang v. Actionet, Inc.*, No. CV 14-00792-AB(SHx), 2015 U.S. Dist. LEXIS 190365, at *3 (C.D. Cal. Feb. 6, 2015) (quoting Fed. R. Civ. P. 16(b)(4); citations omitted). In the Ninth Circuit, although prejudice to the opposing party may be a factor, the “good cause” standard of Rule 16(b) primarily requires a party to act with reasonable diligence. *Id.* (citing *Johnson v. Mammoth Recreations*, 975 F.2d 604, 609 (9th Cir. 1992)). In *Johnson*, the Ninth Circuit forged a path that requires this “good cause” standard

¹⁸ The district court declined to consider the Rule 15 factors set forth by the United States Supreme Court in *Foman v. Davis*, 371 U.S. 178, 182 (1962).

of Rule 16 to be satisfied before any consideration of Rule 15. *Id.* (requiring a party seeking amendment to first establish that “scheduling deadlines cannot be met despite a party’s diligence.”). The underlying purpose of this requirement is the efficient administration of justice. *Norton v. LVNV Funding, LLC*, No. 18-cv-05051-DMR, 2020 U.S. Dist. LEXIS 88809, at *6–7 (N.D. Cal. May 19, 2020) (tracing Ninth Circuit case law and finding diligence where discovery had not closed and dispositive motions deadline had not expired). Once the movant has established good cause for acting outside the time limits set by the scheduling order, the court has discretion to permit amendments to the pleadings under Rule 15, which instructs a court to “freely give leave when justice requires.” Fed. R. Civ. P. 15(a)(2); *see also Foman v. Davis*, 371 U.S. at 182.

Numerous district court cases from the Ninth Circuit have found “good cause” based on the movant’s inability to meet the court-ordered deadline followed by diligent pursuit of amendment. *See, e.g., Blumenfeld Dev. Grp. Ltd. v. Sadlerstone, LLC*, No. 21-cv-1117-WQH-MSB, 2022 U.S. Dist. LEXIS 141032, at *13 (S.D. Cal. Aug. 8, 2022) (finding diligence to add a party where motion to amend was brought within two months and

where discovery was sought prior to expiration of the deadline, but not revealed until after the deadline for adding parties); *Jenkins v. City of Vallejo*, No. 2:19-cv-01896-TLN-DB, 2022 U.S. Dist. LEXIS 5711, at *6 (E.D. Cal. Jan. 11, 2022) (finding diligence where party did not obtain information needed to amend claim during time frame specified in the scheduling order); *Copenhaver v. Cavagna Grp. S.p.A Omeca Div.*, No. CV 19-71-BLG-SPW-TJC, 2021 U.S. Dist. LEXIS 139957, at *6, *9 (D. Mon. July 27, 2021) (finding good cause standard met where facts were discovered after expiration of deadline of scheduling order and motion was filed within four months).

Moreover, courts have routinely concluded that the discovery of new facts is exactly the type of event that ordinarily satisfies the good cause standard. *See, e.g., Ross v. AT&T Mobility, LLC*, No. 19-cv-06669-JST2020, U.S. Dist. LEXIS 255689, at *10 (N.D. Cal. Dec. 18, 2020) (citing cases showing that discovery of new facts ordinarily supports finding of diligence, including *MagTarget LLC v. Saldana*, No. 18-cv-03527-JST, 2019 U.S. Dist. LEXIS 72058, at *2, *5–6 (N.D. Cal. Apr. 29, 2019) and *Melingonis v. Rapid Capital Funding, L.L.C.*, No. 16-cv-490-WQH-KSC, 2017 U.S. Dist. LEXIS 66198, at *8 (S.D. Cal. May 1, 2017)).

Indeed, good cause has been found even where a movant seeks leave to amend based on publicly available information, but delayed filing because it did not appreciate or understand that information until a later date. *See Starship LLC v. Ghacham, Inc.*, Case No. LA CV 21-04665 JAK (JEMx), 2023 U.S. Dist. LEXIS 156806, at *6 (C.D. Cal. July 10, 2023) (finding good cause because plaintiff's explanation that it did not see or understand certain information on the website of the California Secretary of State was "plausible").

In denying the Arltons' motion, the district court relied on only two cases related to the Rule 16 inquiry, neither of which demonstrates a lack of diligence by the Arltons. Appx8. In *Johnson v. Mammoth Recreations*, the defendant alerted the plaintiff *twice* within the deadline of the scheduling order that it had brought suit against the wrong party. *Johnson*, 975 F.2d at 606. The Ninth Circuit held that "[f]ailing to heed clear and repeated signals that all the necessary parties had been named in the complaint does not constitute diligence." *Id.* at 609. In *Eckert Cold Storage, Inc. v. Behl*, the plaintiffs "waited up to seven months after receiving the necessary documents before filing the motion to amend." 943 F. Supp. 1230, 1232–33 (E.D. Cal. 1996). Here, no signals were given

to the Arltons indicating that amendment was required, and both the timing of AeroVironment's document production as well as its marking of documents "Highly Confidential" created hurdles ignored by the district court.

The Arltons have found no case within the Ninth Circuit as draconian as this one. Similarly, the Arltons have located no authority for the proposition that they should be punished for waiting to amend their complaint until sufficient facts became available through discovery to support their trade secrets claims. To the contrary, the district court previously has found that where, as here, counsel sought to amend the pleadings in "a prudent and timely fashion" and only a month passed between when the movant informed the opposing party of the anticipated amendment and when the filing was made, reasonable diligence was exercised and good cause exists. *Yang*, 2015 U.S. Dist. LEXIS 190365, at *4-7.

B. The Arltons demonstrated good cause.

The facts, a substantial number of which the district court ignored, fall squarely on the side of the Arltons.

To meet the scheduling order's deadlines, the Arltons would have had to file their motion no later than January 15, 2021 (i.e., 28 days before the last date to hear a motion (February 15, 2021)) in accordance with the local rules. *See* C.D. Cal. Local Rule 6-1. In addition, Local Rule 7-3 requires the parties to meet and confer at least seven days before bringing such motion, which in this case was January 8, 2021. But given that AeroVironment did not produce the relevant documents until December 30, 2020, and did so in a manner that prevented the Arltons from laying eyes on the very documents that contained their trade secrets, the Arltons had little to no chance of meeting these court-ordered deadlines. The Arltons' counsel had just nine days between December 30, 2020 and January 8, 2021 to: (i) review and digest the documents produced by AeroVironment all of which were marked "Highly Confidential;" (ii) determine a method of obtaining relevant information from the Arltons that might bear on a trade secret claim without disclosing AeroVironment's confidential information to the Arltons; (iii) match AeroVironment's information to information provided by the Arltons to evaluate potential trade secret claims; (iv) engage in legal research as necessary; and (v) communicate the basis for the Arltons'

intended motion to AeroVironment with particularity. In reality, best efforts allowed the discovery of trade secrets claims by or about January 31, 2021. But by that time, although the Arltons had sufficient information to construct their theft of trade secret claim, it was already too late for them to comply with the scheduling order's February 15, 2021 deadline.

By February 19, 2021, the Arltons had decided to bring a motion for leave to amend, duly informed AeroVironment, and sought to meet and confer within five business days. At the meet and confer on February 26, 2021, AeroVironment adopted the position that the Arltons were already too late, having waited “over a month from the production of these documents and [not acting] within the court-ordered deadline.” Appx673. AeroVironment, nonetheless, also sought additional information related to Arltons' new claims as well as the opportunity to review the amended complaint to “identify any correctable deficiencies.” Appx674. These requests—which the Arltons responded to in good faith—only further delayed the Arltons' filing. The Arltons filed their motion to amend on March 22, 2021.

When viewed in context and against the totality of the circumstances, the Arltons sought to amend as soon as practicable. They exercised due diligence by not bringing a trade secrets claim until they had identified sufficient facts to establish one and by following the confidentiality requirements imposed by AeroVironment. They further adhered to the meet and confer processes of the Local Rules. The timing of the Arltons' proposed amendment had nothing to do with gamesmanship and everything to do with the proximity of AeroVironment's confidential document production (December 30, 2020) to its summary judgment filing (February 16, 2021). *See, e.g., Benchmark Young Adult School, Inc. v. Launchworks Life Svcs., LLC*, No. 12-cv-02953-BAS(BGS), 2014 U.S. Dist. LEXIS 91136, at *11 (S.D. Cal. July 3, 2014) (given lack of evidence that movant "knew of allegations prior to the filing of the complaint or made a tactical decision not include the allegations earlier," the movant's plausible explanation was sufficient).

The district court, however, disregarded critical events that affected the overall timing of the Arltons' filing and that were the result of AeroVironment's conduct—i.e., not within the Arltons' control. In particular, the district court failed to factor into its "good cause" analysis

the date of AeroVironment's document production or that AeroVironment's "Highly Confidential" designation of materials considerably slowed the pace of the Arltons' review. The district court also never considered the delay inherent in the Local Rules' requirement for a meaningful meet-and-confer process, which AeroVironment extended with follow-up information requests. Appx15. *See, e.g., Stoddart v. Express Srvs.*, No. 2:12-cv-01054-KJM-CKD, 2017 U.S. Dist. LEXIS 123688, at *7–8 (E.D. Cal. Aug. 4, 2017) (considering non-movant's conduct and the fact that it was complicit in the delay as a factor to be considered in finding good cause). And it also focused on the fact that AeroVironment had already moved for summary judgment by the time the Arltons sought to bring their claims. Yet the district court failed to appreciate that AeroVironment's summary judgment motion actually came early—that is, nine months before the deadline. Appx130.

In addition to omitting from its analysis AeroVironment's role in the timing of the Arltons' motion, the district court gave no weight to the fact that the Arltons needed some minimal amount of time to assess their claims. Appx15. It also chastised the Arltons for not bringing their trade secrets claim at the outset based on suspicions and public information

“and later supplement[ing] their pleadings,” effectively putting the Arltons between the proverbial rock and a hard place. Had the Arltons brought claims at the outset, they no doubt would have been subject to a motion to dismiss. Even after the Arltons brought their claims, AeroVironment complained that the Arltons had failed to articulate their claims with particularity. Appx702. A litigation process that encourages plaintiffs to bring claims prematurely and without the requisite factual basis should not be sanctioned.

C. AeroVironment failed to overcome the presumption in favor of amendment Under Rule 15.

Rule 15(a) provides a liberal amendment policy and a “court should freely give leave [to amend a pleading] when justice so requires. Fed. R. Civ. P. 15(a); *see also Ascon Props., Inc. v. Mobil Oil Co.*, 866 F.2d 1149, 1160 (9th Cir. 1989). A court, however, need not give leave to amend when there is “undue delay,” “bad faith,” “undue prejudice to the opposing party,” or “futility of amendment.” *Foman v. Davis*, 371 U.S. at 182; *see also Smith v. Pac. Prop. Dev. Co.*, 358 F.3d 1097, 111 (9th Cir. 2004). Here, none of these factors weigh against permitting leave. And AeroVironment has failed to overcome the presumption against amendment.

In light of these circumstances, the district court should be reversed and the matter remanded to permit filing of the proposed amended complaint or, in the alternative, to compel the district court to weigh the *Foman* factors under Rule 15.

CONCLUSION

In view of the Phase III Mandate and Lite's prior SBIR awards, the district court erred in holding that the Government could properly consent to AeroVironment's willful infringement under 28 U.S.C. § 1498. Moreover, the district court's determination that AeroVironment's manufacture and use of Terry was *de minimis* has no basis in either this Court's precedent or the law. In addition, the district court abused its discretion in denying the Arltons' motion for leave to amend. This Court should reverse and remand to the district court to allow the Arltons' patent infringement action against AeroVironment to proceed on its merits and direct the district court to permit the Arltons leave to amend their Complaint as requested or, alternatively, to engage in an analysis under Federal Rule of Civil Procedure 15.

Dated: February 5, 2024

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ADDENDUM

**TABLE OF CONTENTS
ADDENDUM**

Nos. 2021-2049, 2024-1084, 2024-1159

Description	Appx Pgs.
[In Chambers] Order Regarding Defendant's Motion for Summary Judgment and Plaintiffs' Motion for Leave to File First Amended Complaint and Join Lite Machines Corporation as a Plaintiff dated April 22, 2021 [D.I. 58]	APPX1–15
[In Chambers] Order Regarding Plaintiffs' Motion for Relief from Judgment Under Fed. R. Civ. P. 60 and Motion to Alter Judgment Pursuant to Fed. R. Civ. P. 59 and Defendant's Motion for Attorney's Fees and Costs dated June 24, 2021 [D.I. 77]	APPX16–22
[In Chambers] Further Order Regarding Defendant's Motion for Summary Judgment dated August 15, 2023 [D.I. 133]	APPX23–30
Judgment Granting Defendant AeroVironment, Inc.'s Motion for Summary Judgment dated September 13, 2023 [D.I. 136]	APPX31–32
U.S. Patent No. 8,042,763 B2 "Rotary Wing Vehicle," October 25, 2011	APPX40–76

UNITED STATES DISTRICT COURT
CENTRAL DISTRICT OF CALIFORNIA

CIVIL MINUTES - GENERAL

Case No.: 2:20-cv-07438-AB-GJS Date: April 22, 2021

Title: *Paul E. Arlton et al v. Aerovironment, Inc.*

Present: The Honorable **ANDRÉ BIROTTE JR., United States District Judge**

Carla Badirian
Deputy Clerk

N/A
Court Reporter

Attorneys Present for Plaintiffs:
None Appearing

Attorneys Present for Defendants:
None Appearing

Proceedings: [IN CHAMBERS] ORDER REGARDING DEFENDANT’S MOTION FOR SUMMARY JUDGMENT (DKT. NO. 35), AND PLAINTIFFS’ MOTION FOR LEAVE TO FILE FIRST AMENDED COMPLAINT AND JOIN LITE MACHINES CORPORATION AS A PLAINTIFF (DKT. NO. 46)

Defendant AeroVironment, Inc. (“AeroVironment” or “Defendant”) moved for summary judgement in its favor on its 28 U.S.C. § 1498 defense on February 16, 2021. (“Motion,” Dkt. No. 35.) On March 5, 2021, Plaintiffs Paul E. Arlton and David J. Arlton (collectively, “the Arltons” or “Plaintiffs”) filed an opposition. (“Opposition,” Dkt. No. 40.) On March 12, 2021, Defendant filed a reply. (“Reply,” Dkt. No. 41.) On March 22, 2021, Plaintiffs filed a sur-reply. (“Sur-reply,” Dkt. No. 47.)

The same day Plaintiffs filed their Sur-reply, Plaintiffs also moved for leave to file a first amended complaint and to join Lite Machines Corp. as a plaintiff. (Dkt. No. 46.) On April 2, 2021, Defendant filed an opposition. (Dkt. No. 56.) On April 9, 2021, Plaintiffs filed a reply. (Dkt. No. 57.)

On March 26, 2021, the Court held a hearing on Defendant’s Motion, and the Motion was taken under submission. (Dkt. 55.) Additionally, finding Plaintiffs’ motion suitable for resolution without oral argument, the Court **VACATES** the hearing set for April 23, 2021. (Fed. R. Civ. P. 78(b); C.D. Cal. L.R. 7-15.)

After considering the parties’ arguments, the Court **GRANTS** Defendant’s Motion and **DENIES** Plaintiffs’ motion for leave to file a first amended complaint and to join Lite Machines Corp. as a plaintiff.

I. BACKGROUND

A. Plaintiffs’ Background

Plaintiffs Paul E. Arlton and David J. Arlton are brothers and founded Lite Machines Corporation (“Lite”) together. (“Arlton Decl.,” Dkt No. 40-2 ¶ 2.) Paul Arlton has been President of Lite since 1991. (*Id.*) “The Arltons are inventors and co-owners of United States Patent No. 8,042,763 [(“the ’763 Patent”)], which issued on October 25, 2011.” (Plaintiffs’ Statement of Disputed Facts and Additional Material Facts (“SAF”), Dkt. No. 41-2 ¶ 6.) The ’763 Patent is titled “Rotary Wing Vehicle” and “relates to aerial vehicles and particularly to unmanned aerial vehicles (UAV).” ’763 Patent at 1:12–13. Plaintiffs purport to have licensed the ’763 Patent to Lite “to commercialize this technology as the Voyeur UAV and the Tiger Moth UAV.” (Dkt. No. 40-1 ¶ 7; Dkt. No. 40-2 ¶ 5.) Plaintiffs assert that “[b]oth the Voyeur UAV and Tiger Moth UAV include the features of at least claim 1 of the ’763 patent.” (*Id.*) Plaintiffs also provide photos of the Voyeur UAV and Tiger Moth UAV with their Opposition. (*See* “Arlton Decl., Ex. A,” Dkt. No. 40-3 at 2–4.)

According to Plaintiffs, “[s]ince 2005, Lite has been awarded over \$30 million in Small Business Innovation Research (‘SBIR’) and Small Business Technology Transfer (‘STTR’) sole-source prime contracts under 15 U.S.C. § 638 (the ‘SBIR Statute’) to develop and demonstrate the Voyeur UAV and Tiger Moth UAV for the Navy, Air Force, Army and Special Operations Command.” (Dkt. No. 40-1 ¶ 8; Dkt. No. 40-2 ¶ 6.) Plaintiffs produce one such contract numbered FA8651-10-C-0337 and dated September 29, 2010 that Plaintiffs claim is “an SBIR Phase III sole-source prime contract[.]” (“Phase III Contract,” Dkt. No. 40-4; Dkt. No. 40-1 ¶ 9; Dkt. No. 40-2 ¶ 7.)¹ The Phase

¹ Although the Phase III Contract does not use the phrase “Phase III,” it does include a provision titled “SMALL BUSINESS INNOVATION RESEARCH (SBIR) PHASE I AND PHASE II CONTRACT REQUIREMENTS (DEC 2005) (TAILORED),” as well as several “FEDERAL ACQUISITION REGULATION CONTRACT CLAUSES” and at least one “DEFENSE FEDERAL ACQUISITION REGULATION SUPPLEMENT CONTRACT CLAUSE” directed to “small business concerns” and the SBIR. (*See* Dkt. No. 40-4 at 14 (*citing* 52.219-06, 52.219-08, 52.219-14, 52.219-28, and 252.227-7018).) Additionally, Exhibit E of the Arlton Decl., dated August 13, 2013, states, “In 2010, Lite Machines received Phase III funding of approximately \$1.3 million from the Air Force

III Contract states that the Air Force contracted with Lite to pay \$1,386,274 for “[f]ive (5) Tiger Moth V6.1 vehicles to support control system developments and flight testing to include software in an executable format on a CD or DVD and Installed on a Government control station or laptop computer.” (Dkt. No. 40-4 at 1–2.)²

“In May 2012, the Arltons presented a scientific research paper titled, ‘Control System Development and Flight Testing of the Tiger Moth UAV’ at the American Helicopter Society 68th Annual Forum.” (“Research Paper,” Dkt. No. 40-5; Dkt. No. 40-1 ¶ 13; Dkt.No. 40-2 ¶ 13.) The Research Paper was co-authored by members of the Aeroflightdynamics Directorate (ARMDEC) of the U.S. Army Research, Development, and Engineering Command. (*See id.*)³

Plaintiffs further claim that “[b]etween 2013 and 2015 the Air Force authorized payment of license fees to the Arltons for the ’763 Patent on multiple occasions.” (Dkt. No. 40-1 ¶ 15; Dkt. No. 40-2 ¶ 15.)⁴ Finally, Plaintiffs assert that on February 2, 2016, the Air Force informed Plaintiffs that there would be no more funding or “follow-on work.” (Dkt. No. 40-1 ¶ 17; Dkt. No. 40-2 ¶ 18.)⁵ According to Plaintiffs, the Arltons were then “forced to close Lite[.]” (*Id.*)

B. The SBIR and STTR Programs

The Small Business Administration describes the SBIR and STTR Programs as “highly competitive programs that encourage domestic small businesses to engage in Federal Research/Research and Development (R/R&D) with the potential for commercialization. Through a competitive awards-based program, SBIR and STTR enable small businesses to explore their technological potential and provide the incentive to profit from its commercialization.” *See About – The SBIR and STTR Programs*, SMALL BUS. ADMIN., <https://www.sbir.gov/about> (last visited March 22, 2021). The SBIR and STTR Programs are codified at § 9 of the Small Business Act, 15 U.S.C. § 638. The SBIR Statute defines the SBIR Program as “a program under which a portion of a Federal agency’s research or research and development effort is reserved for award to small business concerns through a uniform process having” three phases. § 638(e)(4).

for an air launched-off board sensing small UAV.” (Dkt. No. 40-7.)

² Exhibit E of the Arlton Decl., dated August 13, 2013, states that Lite also “received \$1.5 million in SBIR Phase II funding.” (Dkt. No. 40-7.) Plaintiffs otherwise do not produce any evidence that they received \$30 million in SBIR funding. Presumably, the remainder of the funding was awarded in STTR sole-source prime contracts.

³ Plaintiffs also state that the Research Paper was coauthored “by the lead helicopter expert and senior scientist at NASA Ames” that Plaintiffs purportedly awarded a subcontract to, but Plaintiffs did not produce such a subcontract and the Research Paper does not reference “NASA Ames.” (Dkt. No. 40-1 ¶¶ 10–13; Dkt. No. 40-2 ¶¶ 10–13.)

⁴ Plaintiffs provide no supporting documentation or testimony other than the Arlton Decl.

⁵ Again, Plaintiffs provide no supporting documentation or testimony other than the Arlton Decl.

Similarly the SBIR Statute defines the STTR Program as a program “under which a portion of a Federal agency’s extramural research or research and development effort is reserved for award to small business concerns for cooperative research and development through a uniform process having” three phases. § 638(e)(6).

The SBIR Statute states that the first phase of the SBIR program, referred to as Phase I, is used “for determining, insofar as possible, the scientific and technical merit and feasibility of ideas that appear to have commercial potential ... submitted pursuant to SBIR program solicitations.” § 638(e)(4)(A). The second phase of the SBIR Program, referred to as Phase II, is used to “further develop proposals which meet particular program needs, in which awards shall be made based on the scientific and technical merit and feasibility of the proposals, as evidenced by the first phase, considering, among other things, the proposal’s commercial potential[.]” § 638(e)(4)(B). According to the SBIR Statute, a “proposal’s commercial potential” is evidenced by:

- (i) small business concern’s record of successfully commercializing SBIR or other research;
- (ii) the existence of second phase funding commitments from private sector or non-SBIR funding sources;
- (iii) the existence of the third phase [of the SBIR Program, referred to as Phase III,] follow-on commitments for the subject of the research; and
- (iv) the presence of other indicators of the commercial potential of the idea[.]”

See id. The SBIR Statute defines Phase III as follows:

[W]here appropriate, a third phase for work that derives from, extends, or completes efforts made under prior funding agreements under the SBIR program—

- (i) in which commercial applications of SBIR-funded research or research and development are funded by non-Federal sources of capital or, for products or services intended for use by the Federal Government, by follow-on non-SBIR Federal funding awards; or
- (ii) for which awards from non-SBIR Federal funding sources are used for the continuation of research or research and development that has been competitively selected using peer review or merit-based selection procedures.

§ 638(e)(4)(c). The three phases of the STTR Program are similarly defined, with the exception that Phases I and II of the STTR Program do not require that the proposals have “commercial potential.” *See* § 638(e)(6).

Under the subsection titled “Phase III agreements, competitive procedures, and justification for awards,” the SBIR Statute states, “In the case of a small business concern

that is awarded a funding agreement for Phase II of an SBIR or STTR program, a Federal agency may enter into a Phase III agreement with that business concern for additional work to be performed during or after the Phase II period.” § 638(r)(1). The subsection also states, “[t]o the greatest extent practicable, Federal agencies and Federal prime contractors shall ... issue, without further justification, Phase III awards relating to technology, including sole source awards, to the SBIR and STTR award recipients that developed the technology.” § 638(r)(4).

C. Defendant’s Background

Between 2013 and 2019, Defendant entered into at least three subcontracts with the Jet Propulsion Laboratory (“JPL”) “to build a UAV helicopter for use in the planet Mars (hereinafter the ‘Mars Helicopter’[.]” (Defendant’s Statement of Uncontroverted Facts (“SUF”), Dkt. No. 35-1 ¶ 3; “Complaint,” Dkt. No. 1 ¶ 8; “2013 Subcontract,” Dkt. No. 36-1; “2014 Subcontract,” Dkt. No. 36-2; “2019 Subcontract,” Dkt. No. 36-3 (collectively, “the Subcontracts”).) “JPL is a federally funded research and development center (‘FFRDC’) managed by the California Institute of Technology (‘Caltech’) under a prime contract with [the National Aeronautics and Space Administration (‘NASA’)]” (Dkt. No. 35 at 3 (*citing* “Beckham Decl.,” Dkt. No. 36 ¶ 8; “Prime Contract,” Dkt. No. 36-4 at AV-00000007).) “The subcontracts between JPL and [Defendant] fall ‘UNDER JPL’s NASA PRIME CONTRACT.’” (Dkt. No. 35-1 ¶ 4 (*citing* Dkt. No. 36 ¶ 7; Dkt. No. 36-1 at AV-00000511; Dkt. No. 36-2 at AV-00000526; Dkt. No. 36-3 at AV-00000764; Dkt. No. 36-4 at AV-00000001).)

“JPL’s prime contract with NASA includes [a Federal Acquisition Regulation (‘FAR’) authorization and consent clause, Alternate I (FAR 52.227-1, Alt. I).” (Dkt. No. 35-1 ¶ 5 (*citing* Dkt. No. 36 ¶ 10; Dkt. No. 36-4 at AV-00000152).) Each of the Subcontracts includes FAR clause 52.227-1, Alt. I as well. (Dkt. No. 35-1 ¶ 6 (*citing* Dkt. No. 36 ¶¶ 11–12; Dkt. No. 36-1 at AV-00000512; Dkt. No. 36-2 at AV-00000527; Dkt. No. 36-3 at AV-00000765; Dkt. No. 36-5 at AV-00000876–77 (JPL General Provisions incorporated into 2013 Subcontract); Dkt. No. 36-6 at AV-00000820 (JPL General Provisions incorporated into 2014 Subcontract); Dkt. No. 36-7 at AV-00000948 (JPL General Provisions incorporated into 2019 Subcontract)).)

D. Litigation History

On August 17, 2020, Plaintiffs filed a Complaint in this Court accusing Defendant of infringing at least claim 1 of the ’763 Patent by “at least by making, using, offering to sell, and selling [the Mars Helicopter] in the United States [(collectively, “the Accused Activities”)].” (Dkt. No. 1 ¶¶ 25–26.) On September 10, 2020, Defendant filed an Answer, which asserts throughout that “Plaintiffs have no remedy against AeroVironment due to the applicability of 28 U.S.C. § 1498[.]” (Dkt. No. 19 ¶ 1.)

The parties participated in a Rule 26(f) conference on November 17, 2020. (Dkt. No. 41-1, Ex. A.) On November 19, 2020, Plaintiffs served their First Set of Requests for Production of Documents. (Dkt. No. 40-8 ¶ 2; Dkt. No. 40-9.) On November 24, 2020, Defendant’s counsel emailed Plaintiffs’ counsel to inform them that Defendant intended “to move for early summary judgment on its defense under 28 U.S.C. § 1498” and requested that Plaintiffs identify any discovery they believed was necessary to evaluate its § 1498 defense. (*Id.*) On November 27, 2020, the parties filed a joint 26(f) report. (Dkt. No. 29.) In the report, Defendant stated that it sought “leave to file an early motion for summary judgment on its Section 1498 defense.” (*Id.* at 9.) Plaintiffs’ statement in the report responded to Defendant’s arguments, but did not mention the SBIR program. (*Id.* at 11–12.)

On December 12, 2020, the Court issued its Order Re: Jury/Court Trial requesting that the parties “meet and confer on Defendant’s anticipated Section 1498 motion, and insofar as discovery may be necessary, they should seek to agree to conduct the relevant discovery first.” (Dkt. No. 33 at 2.) The Court also stated, “If the parties cannot agree, Defendant may file an early motion for summary judgment on the Section 1498 defense only, and if Plaintiffs think they need discovery, they can seek a continuance pursuant to Fed. R. Civ. P. 56(d).” (*Id.*) The Court also set the deadline for the last date to hear a motion to amend the pleadings and add parties as February 12, 2021. (*Id.* at 3.)

On December 21, 2020, Defendant responded to Plaintiffs’ First Set of Requests for Production of Documents. (Dkt. No. 40-8 ¶ 3; Dkt. No. 40-10.) Defendant declined to produce documents in response to many of the requests, stating, “Any discovery on the merits should proceed, if at all, only after the Court resolves AeroVironment’s motion for summary judgment on its Section 1498 defense, consistent with Congress’s intent ‘to relieve private Government contractors from expensive litigation with patentees.’” (*Id.*)

On January 8, 2021, the parties met and conferred regarding what discovery needed to be conducted before Defendant brought its motion. (Dkt. No. 35-2 ¶ 8; Dkt. No. 40-8 ¶ 4.) “Plaintiffs agreed to outline in greater detail the reasons that discovery was necessary to respond to an anticipated summary judgment motion by Defendant” and provided its response on January 14, 2021. (Dkt. No. 40-8 ¶¶ 4–5.)

On February 3, 2021, Defendant responded to Plaintiffs’ January 14, 2021 letter, stating that it planned to file its Motion on February 12, 2021 if Plaintiffs did not offer to settle the case. (Dkt. No. 41-1 ¶ 5; *id.*, Ex. C.) On February 16, 2021, Defendant filed its Motion. (Dkt. No. 35.) On February 17, 2021, NASA filed a “Statement of Interest of the United States” stating that the United States granted its authorization and consent for Defendant’s alleged use and manufacture of patented inventions claimed in the ’763 Patent. (“Statement of Interest,” Dkt. No. 37.)

II. LEGAL STANDARD

A. Summary Judgment

“Summary judgment is appropriate in a patent case, as in other cases, when there is no genuine issue as to any material fact and the moving party is entitled to judgment as a matter of law.” *Nike Inc. v. Wolverine World Wide, Inc.*, 43 F.3d 644, 646 (Fed. Cir. 1994); Fed. R. Civ. P. 56(c) (motion for summary judgment must be granted when “the pleadings, the discovery and disclosure materials on file, and any affidavits show that there is no genuine issue as to any material fact and that the movant is entitled to judgment as a matter of law.”); *Anderson v. Liberty Lobby, Inc.*, 477 U.S. 242, 247-48 (1986). The moving party bears the initial burden of identifying the elements of the claim or defense and evidence that it believes demonstrates the absence of an issue of material fact. *Celotex Corp. v. Catrett*, 477 U.S. 317, 323 (1986).

“Where the record taken as a whole could not lead a rational trier of fact to find for the nonmoving party, there is no ‘genuine issue for trial.’” *Matsushita Elec. Indus. Co., Ltd. v. Zenith Radio Corp.*, 475 U.S. 574, 587 (1986). The Court must draw all reasonable inferences in the nonmoving party’s favor. *In re Oracle Corp. Sec. Litig.*, 627 F.3d 376, 387 (9th Cir. 2010) (citing *Anderson*, 477 U.S. at 255). Nevertheless, inferences are not drawn out of thin air, and it is the nonmoving party’s obligation to produce a factual predicate from which the inference may be drawn. *Richards v. Nielsen Freight Lines*, 602 F. Supp. 1224, 1244-45 (E.D. Cal. 1985), *aff’d*, 810 F.2d 898 (9th Cir. 1987). “[M]ere disagreement or the bald assertion that a genuine issue of material fact exists” does not preclude summary judgment. *Harper v. Wallingford*, 877 F.2d 728, 731 (9th Cir. 1989).

B. 28 U.S.C. § 1498

Section 1498 is an affirmative defense, not a jurisdictional bar. *Manville Sales Corp. v. Paramount Sys., Inc.*, 917 F.2d 544, 554 (Fed. Cir. 1990). Section 1498 “relieves a third party from patent infringement liability, and it acts as a waiver of sovereign immunity and consent to liability by the United States.” *Madey v. Duke Univ.*, 307 F.3d 1351, 1359 (Fed. Cir. 2002). A § 1498 affirmative defense is a highly factual determination, whereby a defendant must establish that “(1) the [infringing] use is ‘for the Government’; and (2) the [infringing] use is ‘with the authorization and consent of the Government.’” *Sevenson Env’l. Servs., Inc. v. Shaw Env’tl., Inc.*, 477 F.3d 1361, 1365 (Fed. Cir. 2007). “The burden is initially upon the movant to establish the absence of any genuine issue of material fact and entitlement to judgment as a matter of law.” *Crater Corp. v. Lucent Techs.*, 255 F.3d 1361, 1366 (Fed. Cir. 2001) (citing *Celotex*, 477 U.S. at 323–34).

C. Leave to Amend

To determine whether a proposed amendment to pleading should be allowed after the scheduling order deadline for amending pleadings has expired, there are typically two steps: (1) the party seeking amendment must show good cause to allow modification of the scheduling order under Rule 16, and (2) the court must determine whether amendment is proper under Rule 15. *See Johnson v. Mammoth Recreations, Inc.*, 975 F.2d 604, 607–08 (9th Cir. 1992); *Eckert Cold Storage, Inc. v. Behl*, 943 F. Supp. 1230, 1232–33 (E.D. Cal. 1996).

“Only after the moving party has demonstrated diligence under Rule 16 does the court apply the standard under Rule 15 to determine whether the amendment was proper.” *Id.* (citations omitted). Rule 15(a)(2) instructs the court to “freely give leave when justice so requires.” Fed. R. Civ. P. 15(a)(2); *see Foman v. Davis*, 371 U.S. 178, 182 (1962).

“This policy is to be applied with extreme liberality.” *Desertrain v. City of Los Angeles*, 754 F.3d 1147, 1154 (9th Cir. 2014) (citation omitted); *see also DCD Programs, Ltd. v. Leighton*, 833 F.2d 183, 186 (9th Cir. 1987) (citation omitted) (“Amendment is to be liberally granted where from the underlying facts or circumstances, the [claimant] may be able to state a claim.”) Even so, “[l]eave to amend is not automatic[.]” *Kaneka Corp. v. SKC Kolon PI, Inc.*, No. CV 11-03397 JGB (RZx), 2013 WL 11237203, at *2 (C.D. Cal. May 6, 2013). In the Ninth Circuit, courts consider five factors in deciding whether to grant leave to amend: “bad faith, undue delay, prejudice to the opposing party, futility of amendment, and whether the plaintiff has previously amended the complaint.” *Id.* (citing *Nunes v. Ashcroft*, 375 F.3d 805, 808 (9th Cir. 2004)); *see also Forman v. Davis*, 371 U.S. 178, 182 (1962). “Futility alone can justify the denial of a motion for leave to amend.” *Nunes*, 375 F.3d at 808.

The party opposing amendment bears the burden of showing prejudice, which is the “touchstone of the inquiry under [R]ule 15(a).” *Eminence Capital, LLC v. Aspen, Inc.*, 316 F.3d 1048, 1052 (internal quotation marks omitted) (citation omitted); *see also Johnson*, 975 F.2d at 609 (“Rule 15(a)’s liberal amendment policy . . . focuses on the bad faith of the party seeking to interpose an amendment and the prejudice to the opposing party”). Ultimately, leave to amend lies “within the sound discretion of the trial court.” *United States v. Webb*, 655 F.2d 977, 979 (9th Cir. 1981); *see also Rich v. Shrader*, 23 F.3d 1205, 1208 (9th Cir. 2016).

III. ANALYSIS

A. Defendant’s Summary Judgement Motion

Defendant seeks a summary judgment determination that the Accused Activities of are immune from patent infringement liability under § 1498. (*See generally* Dkt. No. 35.) Defendant argues that its Mars Helicopter was specifically designed and made for the Government as evidenced by the Subcontracts, the Prime Contract, and Plaintiffs’ own allegations in the Complaint. (*See id.* at 8–9.) Defendant also contends that the Accused

Activities were done with the Government’s express authorization and consent as evidenced by the inclusion of FAR clause 52.227-1 in each of the Subcontracts and the Prime Contract, as well as the Statement of Interest filed by NASA. (*See id.* at 9–13.)

Plaintiffs respond that the Court should deny the Motion or at least defer ruling on it until after the parties conduct additional discovery. (*See generally* Dkt. No. 40.) *First*, Plaintiffs argue that Defendant’s allegedly infringing activities could not be “for the Government” because they were contrary to the Government’s established policy under the SBIR Program. (*See id.* at 11–13.) *Second*, for similar reasons, Plaintiffs assert that the Government lacked authority to authorize and consent to the accused infringing activity because it was obligated to contract with the Alrtons and Lite under the SBIR Program. (*See id.* at 13–16.) *Third*, Plaintiffs request that it be permitted additional discovery to show that the Government did not actually authorize and consent to accused infringing activities, stating, “If this Court indeed is to determine that the Statute is as broad as AeroVironment contends, it should do so against a full factual record.” (*See id.* at 16–21.)

In its Reply, Defendant emphasizes that Plaintiffs do not dispute any of the facts put forth by Defendant. (*See* Dkt. No. 41 at 2–3.) Defendant argues that “[a]s a threshold matter, this Court cannot entertain Plaintiffs’ argument about the propriety of the award of the Mars Helicopter Subcontracts to [Defendant]” because the Court of Federal Claims (“COFC”) retains exclusive jurisdiction for such claims. (*Id.* at 4.) Defendant also argues that the COFC already rejected Plaintiffs’ argument in *Lite Machines Corp. v. United States*, 143 Fed. Cl. 267, 281 (2019). (*See id.* at 5–7.) Further, Defendant asserts that Plaintiffs’ arguments about the SBIR Program are irrelevant to whether § 1498 applies. (*See id.* at 7–11.) Finally, Defendant argues that Plaintiffs’ request for additional discovery is speculative and irrelevant. (*See id.* at 11–15.)

In its Sur-reply, Plaintiffs respond that this Court should ignore the COFC’s decision in *Lite Machines Corp.* because “the court in *Lite Machines Corp.* did not address the question pending before this Court; (2) the court’s decision was factually and legally erroneous, and has been subject to a motion to reconsider, yet to be ruled upon, and pending since June 2019; and (3) portions of the *Lite Machines Corp. v. United States* matter have been deemed classified.” (Dkt. No. 47 at 1.)

The Court considers each of these arguments in turn.

i. Whether the Accused Activities Were Done “For the Government”

Defendant argues that the Accused Activities related to the Mars Helicopter were done “for the Government.”

“A use [or manufacture] is ‘for the Government’ if it is ‘in furtherance and fulfillment of a stated Government policy’ which serves the Government’s interests and which is ‘for the Government’s benefit.’” *Saint-Gobain Ceramics & Plastics, Inc. v. II-VI Inc.*, 369 F. Supp. 3d 963, 977 (C.D. Cal. 2019) (*quoting* *Madey*, 413 F. Supp. 2d at 607).

This prong is satisfied where “the use or manufacture of a patented method or apparatus occur pursuant to a contract with the government and for the benefit of the government.” *Sevenson*, 477 F.3d at 1365–66; *see also Saint-Gobain*, 369 F. Supp. 3d at 977. Further, the Government’s benefit need not be the “primary purpose” of a government contract. *See Sevenson*, 477 F.3d at 1365–66.

The Accused Activities related to the Mars Helicopter were clearly “for the Government.” There is no genuine dispute of fact that Defendant is a subcontractor for the Government contracted specifically to work on the Mars Helicopter. (See Dkt. No. 1 ¶ 8; Dkt. No. 36-1; Dkt. No. 36-2; Dkt. No. 36-3; Dkt. No. 36-4.) The Prime Contract states that JPL’s “primary mission is to support the NASA Science Mission Directorate (SMD) in carrying out the specific objectives identified in the SMD Science Plan,” describes specific areas to be addressed, and lists goals for the JPL to achieve its mission. (Dkt. No. 36-4 at AV-00000019.) The 2013 Subcontract states that Defendant “shall provide support to the development of a proposal to the Mars 2020 Announcement of Opportunity for the Mars Heli-Scout air vehicle propulsion subsystem.” (Dkt. No. 36-1 at AV-00000514.) The 2014 Subcontract states that Defendant “shall develop conceptual designs for a Vertical Take-off and Landing (VTOL) aircraft suitable for demonstration of free flight in a simulated Mars atmosphere,” which “will build on previous coaxial helicopter design work developed under [the 2013 Subcontract].” (Dkt. No. 36-2 at AV-00000529.) And the 2019 Subcontract states that Defendant “shall furnish the personnel to assist JPL, to the extent requested by JPL, in connection with the Mars Helicopter Project (MHP).” (Dkt. No. 36-3 at AV-00000766.) Thus, the express language of the Prime Contract and Subcontracts shows that Defendant worked with JPL to support NASA in connection with the Mars Helicopter Program, which is ‘in furtherance and fulfillment of a stated Government policy’ which serves the Government’s interests and which is ‘for the Government’s benefit.’” *Saint-Gobain*, 369 F. Supp. 3d at 977.

Plaintiffs do not dispute the stated purposes of the Subcontracts and Contract but rather argue that the Subcontracts were contrary to the Government’s policies articulated in the Policy Directives issued in connection with the SBIR Program. (Dkt. No. 40 at 11–13 (*citing* “SBIR Policy Directive,” (effective May 2, 2019), *available at* <https://www.federalregister.gov/documents/2019/04/02/2019-06129/small-business-innovation-research-program-and-small-business-technology-transfer-program-policy>)).) According to Plaintiffs, Lite “was clearly entitled to the Mars Helicopter contracts that were awarded to [Defendant] ... based on a plain reading of the SBIR Statute, unless the Mars Helicopter Program were to forego use of [Plaintiffs’] technology.” (Dkt. No. 40 at 12.) Thus, Plaintiffs contend that “application of Section 1498 here would undermine [the government policy] that has been lauded by the Small Business Administration.” (*Id.*)

The Court declines to read into § 1498 a requirement that the “stated Government policy” does not conflict with another policy. Section 1498 only requires that the accused activities be “for the Government,” and the Federal Circuit has held that the benefit need not be the primary purpose of the contract, so long as it is more than an incidental benefit. *See Sevenson*, 477 F.3d at 1365–66; *IRIS Corp. v. Japan Airlines Corp.*, 769 F.3d 1359, 1362 (Fed. Cir. 2014) (“Incidental benefit to the government is insufficient, but it is not

necessary for the Government to be the sole beneficiary....”) (internal quotations omitted). Plaintiffs do not provide any legal support for their position that when a “stated Government policy” articulated in a government contract conflicts with another stated Government policy that the contract cannot be “for the Government.” To impose such a requirement would require the Court to speculate which policy the Government intended to control, which the Court will not do.

The legislative purpose of § 1498 also supports Defendant’s position. Section § 1498(a) was first enacted in 1910, and was later broadened in order to aid the Government’s procurement efforts during World War I. As the Court explained in *Richmond Screw Anchor Co. v. United States*, 275 U.S. 331, 345 (1928): “The intention and purpose of Congress in the act of 1918 was to stimulate contractors to furnish what was needed for the war, without fear of becoming liable themselves for infringements to inventors or the owners or assignees of patents.” The Federal Circuit has expressly held that, “the coverage of § 1498 should be broad so as not to limit the Government’s freedom in procurement by considerations of private patent infringement.” *TVI Energy*, 806 F.2d at 1060. In other words, § 1498 was enacted to give the Government the freedom to contract with whomever it chooses in order to procure goods or services while providing immunity to those contractors. Deciding who to contract with often may require choosing between competing policy interests. It follows that § 1498 also allows the Government to decide between these policy interests, and the Court will not question the Government’s decision to choose one policy over another.

Accordingly, the Court finds that the accused activities were “for the Government.”

ii. Whether the Accused Activities Were Done with the Government’s “Authorization and Consent”

Defendant also argues that the accused activities were done with the express “authorization and consent of the Government.”

Under § 1498, the “authorization and consent” of the government may be express or implied. *Golden v. United States*, 137 Fed. Cl. 155, 175 (Fed. Cl. 2018); *TVI Energy Corp. v. Blane*, 806 F.2d 1057, 1060 (Fed. Cir. 1986) (“In proper circumstances, Government authorization can be implied.”) “When the Government provides express consent, that consent may be very broad, extending to any patented invention and any infringing use, or may be limited to only certain patented inventions or to only those uses that are necessary or are specifically consented to by the Government.” *Madey v. Duke Univ.*, 413 F. Supp. 2d 601, 608 (M.D.N.C. 2006) (citing *Carrier Corp. v. United States*, 534 F.2d 244, 249 (Ct. Cl. 1976)). “Such express consent is often contained in the language of the Government contract itself, or in other formal, written authorization from the Government.” *Id.* at 607–608. “Where, as here, a government contract contains an explicit authorization and consent clause (and the parties have alleged no alternative source for government authorization and consent), the scope of the government's authorization and consent to liability naturally hinges on the language of that clause.” *Sevenson*, 477 F.3d at 1366–67.

The Government provided authorization and consent in this case. The Prime Contract and each of the Subcontracts include FAR clause 52.227-1, Alt. I, titled “Authorization and Consent,” which broadly states, “The Government authorizes and consents to *all* use and manufacture of any invention described in and covered by a United States patent in the performance of this contract or any subcontract at any tier.” 48 C.F.R. § 52.227–1, Alt. I (emphasis added). To the extent there was any question whether the Government consented to the use and manufacture of the particular technology described in the ’763 Patent, the Government also filed a Statement of Interest in this case providing express consent to the accused activities. (See Dkt. No. 37.) Thus, there is no genuine dispute that the Government provided authorization and consent.

Plaintiffs argue that NASA and JPL lacked the authority to contract with Defendant, and therefore could not authorize and consent to the accused activities. Specifically, Plaintiffs argue that the Government “was obligated to award an SBIR Phase III sole-source prime contract to Lite for the Mars Helicopter program to the greatest extent practicable[,]” and that it violated the SBIR Statute and SBIR Policy Directive by awarding the contract to Defendant. (Dkt. No. 40 at 14.)⁶

The Court finds that the Government did not lack the authority to contract with Defendant. Although not binding, the COFC’s analysis of the SBIR Statute in *Lite Machines* is persuasive. In evaluating whether the SBIR Statute required the Government to continue to contract with Lite, the court found the SBIR Statute “does not require that the government award a Phase III contract to a recipient of a Phase I or Phase II SBIR award under which the relevant technology was developed.” *Lite Machines*, 143 Fed. Cl. at 283. As the Court reasoned, “§ 638(e)(4)(c) indicates that Phase III contracts are to be awarded ‘where appropriate.’” *Id.* (citing § 638(e)(4)(c)); see also *id.* at 284 (citing § 638(r)(1) (stating that, when a small business concern is awarded a Phase II agreement, “a Federal agency *may* enter into a Phase III agreement with that business concern for additional work to be performed during or after the Phase II period”) (emphasis added)). Moreover, as evidence by the use of the phrase “[t]o the greatest extent practicable,” “§ 638(r)(4) appears to be aimed at encouraging, but not requiring, an agency to seriously consider awarding a contract to the developer of the technology in the context of a SBIR Phase III award relating to technology developed as part of the SBIR program.” *Id.*

Further, in considering a related subsection of the SBIR Statute, the Federal Circuit has held that “§ 638 imposes no duty on the government to award a Phase III contract to a concern that successfully completes a Phase II contract.” *Night Vision Corp. v. United*

⁶ Additionally, Plaintiffs argue that the Prime Contract includes a clause that “specifically prohibits JPL from competing with commercial enterprises such as Lite.” (*Id.* (citing Dkt. No. 36-4 at AV-00000007 (stating that JPL “shall not use its privileged information or access to facilities to compete with the private sector in contravention of FAR 35.017”))). Plaintiffs do not provide any evidence that JPL competes in the private sector, however, and the Court is not persuaded by Plaintiffs’ argument.

States, 469 F.3d 1369, 1374 (Fed. Cir. 2006) (addressing § 638(j)(2)(C), which states, “Not later than 90 days after October 28, 1982, the Administrator shall modify the policy directives issued pursuant to this subsection to provide for ... procedures to ensure, *to the extent practicable*, that an agency which intends to pursue research, development, or production of a technology developed by a small business concern under an SBIR program enters into follow-on, non-SBIR funding agreements with the small business concern for such research, development, or production.”) (emphasis added). The Federal Circuit reasoned that to hold otherwise “would seriously limit the government’s ability to select the form of procurement that it considers most appropriate in the particular situation.” *Id.* The same reasoning applies here. *See TVI Energy*, 806 F.2d at 1060 (“the coverage of § 1498 should be broad so as not to limit the Government’s freedom in procurement by considerations of private patent infringement”). Thus, contrary to Plaintiffs’ assertion, the Government was not obligated to contract with Lite.⁷

Plaintiffs also argue that the Government could have “tried to meet its obligations to the Arltons and Lite by instructing AeroVironment not to use the Arltons’ technology, either directly or indirectly, for the Mars Helicopter, but AeroVironment disregarded those instructions, putting the Government in a bind.” (Dkt. No. 40 at 15–16.) But the broad authorization and consent clause included in the Subcontracts and the Statement of Interest show otherwise. Further, assuming the Government did instruct Defendant to avoid the technology claimed in the ’763 Patent, the Statement of Interest shows that the Government retroactively authorizes and consents to the Accused Activities. *See Auerbach v. Sverdrup Corp.*, 829 F.2d 175, 179–180 (Fed. Cir. 1987) (noting that for purposes of § 1498, “express documentary evidence” of the government’s consent “[o]bviously ... will do,” and that “the form of the [government’s] consent” may include “retroactive consent”); *Hughes Aircraft Co. v. United States*, 534 F.2d 889, 901 (Ct. Cl. 1976) (stating that “post hoc intervention of the Government in pending infringement litigation against individual contractors” establishes authorization and consent).

Accordingly, the Court finds that the Government provided “authorization and consent.”⁸

iii. Whether Plaintiffs Are Entitled to Additional Discovery

The Court also denies Plaintiffs’ request for additional discovery.

Federal Rule of Civil Procedure 56(d) provides, “[i]f a nonmovant shows by affidavit or declaration that, for specified reasons, it cannot present facts essential to justify its opposition, the court may: (1) defer consideration of the motion or deny it; (2)

⁷ Plaintiffs’ attempts to distinguish *Night Vision* in their Sur-reply are unpersuasive.

⁸ Underlying much of Plaintiffs’ argument is the mistaken belief that Plaintiffs would have no recourse for Defendant’s alleged infringement if § 1498 applies. Section 1498 provides that “the owner’s remedy shall be by action against the United States in the United States Court of Federal Claims for the recovery of his reasonable and entire compensation for such use and manufacture.” § 1498(a).

allow time to obtain affidavits or declarations or to take discovery; or (3) issue any other appropriate order.” The burden is on Plaintiffs to show that the evidence sought likely exists and that it would prevent summary judgment. *Chance v. Pac-Tel Teletrac Inc.*, 242 F.3d 1151, 1161 n.6 (9th Cir. 2001). The district court does not abuse its discretion by denying further discovery if the movant has failed diligently to pursue discovery in the past; or, put differently, the district court only abuses its discretion “if the movant diligently pursued its previous discovery opportunities, and if the movant can show how allowing additional discovery would have precluded summary judgment.” *Id.* (internal citations omitted). The purpose of Rule 56(d) is to prevent the nonmoving party from being “railroaded” by a premature summary judgment motion.

Plaintiffs argue that discovery is necessary to show “whether the Government had the obligation to award an SBIR Phase III contract to the Arltons, whether Section 1498 can apply in view of what the Arltons believe the Government’s obligations to them were under the SBIR Statute, and whether the Government provided any directions to AeroVironment to avoid the Arltons’ technology, such that consent was either not given, or even expressly revoked.” (Dkt. No. 40 at 17.) These issues were already explicitly addressed in Plaintiffs’ Opposition, though, and as stated above, the Court rejects each of these arguments as a matter of law. Moreover, “the evidence sought by Plaintiff[s] is the ‘object of pure speculation.’” *Richter v. United States*, No. 2:01-CV-5240, 2002 WL 31031777, at *7 (C.D. Cal. Apr. 2, 2002) (*quoting Exxon Corp. v. Federal Trade Comm’n*, 663 F.2d 120, 127 (D.C. Cir. 1980)) (denying Rule 56(f) request for additional discovery). For instance, Plaintiffs argue that “Request [for Production] No. 4 is also relevant to the question of any plans to otherwise utilize the Arltons’ technology[,]” but concede that “Defendant has indicated there are no such plans” and offers no other support for its request. (Dkt. No. 40 at 20.)

Accordingly, the Court finds that Plaintiffs’ Rule 56(d) request for additional discovery is unwarranted.

B. Plaintiffs’ Motion for Leave to File a First Amended Complaint and to Join Lite as a Plaintiff

Plaintiffs also move for leave to file a first amended complaint and to join Lite as a plaintiff. (Dkt. No. 46.) Specifically, Plaintiffs seek to add claims pursuant to the Defend Trade Secrets Act, 18 U.S.C. § 1836 and the California Uniform Trade Secrets Acts, Cal. Civ. Code §§ 3426–3426.11. (*See id.* at 1.) Plaintiffs argue that they exercised diligence in pursuing their trade secret claims and established good cause for modifying the scheduling order. (*See id.* at 6–9.) Plaintiffs assert that they were not aware of the facts necessary to add its trade secret claims until after Defendant produced certain documents. (*See id.*) According to Plaintiffs, on receiving these documents, “on or about January 31, 2021, the Arltons began considering the instant theft of trade secrets claims.” (*Id.* at 7.)

Defendant responds that Plaintiffs’ were not diligent in seeking leave to amend. (*See* Dkt. No. 56 at 3–6.) Specifically, Defendant argues that Plaintiffs filed their complaint eight months ago and the Court’s Scheduling Order adopted Plaintiffs’ suggested date of February 12, 2021 for the deadline to add parties and amend pleadings

in this case. (*See id.* at 1, 3.) Defendant also emphasizes that Plaintiff conceded “that [Plaintiffs] had fully ‘corroborated’ their claim nearly two weeks before the deadline to amend pleadings and nevertheless chose to ignore the court’s deadline.” (*Id.* at 4.) Defendant also asserts that Plaintiffs’ proposed amended complaint is futile. (*See id.* at 6–13.) Finally, Defendant argues that Plaintiffs were also not diligent in seeking leave add Lite. (*See id.* at 15–16.)

Plaintiffs reply that they brought this motion as soon as was practical under the circumstances. (*See* Dkt. No. 57 at 2–4.) Plaintiffs also argue that their amendment is not futile. (*See id.* at 4–9.)

The Court agrees with Defendant that Plaintiffs were not diligent in seeking leave to amend the Complaint and has not shown good cause to amend the Court’s Scheduling Order. Plaintiffs received Defendant’s only production on December 30, 2020. (*See* Dkt. No. 46 at 2.) Despite this, Plaintiffs state that it did not start contemplating seeking leave to amend until about January 31, 2021, which Plaintiffs admit was after the January 8, 2021 deadline to file a motion for leave to amend. (*See id.* at 7; Dkt. No. 57 at 2.) Yet Plaintiffs did not seek leave to amend until nearly two months after this date on March 22, 2021. Notably, Plaintiffs waited until after Defendant’s dispositive motion on its § 1498 defense was fully briefed to file its motion for leave to amend.

Additionally, Plaintiff admits that the details regarding the specific characteristics of the Mars Helicopter that they claim relate to their trade secrets were publicly available. (*See* Dkt. 46 at 3.) Plaintiffs also admit that they “suspected that the Mars Helicopter Ingenuity incorporated trade secret information from the Arltons” “as of the filing of the Original Complaint on August 17, 2020.” (*See id.* at 1.) Plaintiffs only assert that the produced documents suggested that Defendant did not independently develop the technology, but Plaintiffs still could have sought leave to amend prior to Defendant’s production and later supplemented their pleadings. (*See id.* at 3.) Thus, the Court finds that Plaintiffs were not diligent in seeking leave to amend and have not shown good cause to modify the Scheduling Order.

Accordingly, the Court **DENIES** Plaintiffs’ motion for leave to file a first amended complaint and to join Lite as a plaintiff.

IV. CONCLUSION

For the foregoing reasons, the Court finds that Plaintiffs’ claim for patent infringement is barred by § 1498 as a matter of law and **GRANTS** Defendant’s motion for summary judgment. Because the Court grants the Motion, the Court declines to consider Defendant’s evidentiary objections. (*See* Dkt. No. 41-3.) The Court also **DENIES** Plaintiffs’ motion for leave to file a first amended complaint and to join Lite as a plaintiff. Defendant shall file a proposed judgment within 14 days of the issuance of this order for this case.

The Pretrial Conference and Jury Trial dates are vacated.
IT IS SO ORDERED.

UNITED STATES DISTRICT COURT
CENTRAL DISTRICT OF CALIFORNIA

JS-5

CIVIL MINUTES - GENERAL

Case No.: 2:20-cv-07438-AB-GJS Date: June 24, 2021

Title: *Paul E. Arlton et al v. Aerovironment, Inc.*

Present: The Honorable **ANDRÉ BIROTTE JR., United States District Judge**

Carla Badirian
Deputy Clerk

N/A
Court Reporter

Attorneys Present for Plaintiffs:
None Appearing

Attorneys Present for Defendant:
None Appearing

**Proceedings: [IN CHAMBERS] ORDER REGARDING PLAINTIFFS’
MOTION FOR RELIEF FROM JUDGEMENT UNDER FED.
R. CIV. P. 60 AND MOTION TO ALTER JUDGMENT
PURSUANT TO FED. R. CIV. P. 59 (DKT. NO. 66) AND
DEFENDANT’S MOTION FOR ATTORNEY’S FEES AND
COSTS (DKT. NO. 67)**

Defendant AeroVironment, Inc. (“AeroVironment” or “Defendant”) moves for attorney’s fees under 35 U.S.C. § 285 and 28 U.S.C. § 1927, and costs. (“Fees Motion,” Dkt. No. 67.) Plaintiffs Paul E. Arlton and David J. Arlton (collectively, “the Arltons” or “Plaintiffs”) filed an opposition. (“Fees Opposition,” Dkt. No. 68.) Defendant filed a reply. (“Fees Reply,” Dkt. No. 73.)

Additionally, Plaintiffs move for relief from judgment under Fed. R. Civ. P. 60 or to alter the judgment under Fed. R. Civ. P. 59. (“Relief Motion,” Dkt. No. 66.) Defendant filed an opposition. (“Relief Opposition,” Dkt. No. 69.) Plaintiffs filed a reply. (“Relief Reply,” Dkt. No. 71.)

Finding the parties' motions suitable for resolution without oral argument, the Court **VACATES** the hearing set for June 25, 2021. (Fed. R. Civ. P. 78(b); C.D. Cal. L.R. 7-15.)

After considering the parties' arguments, the Court **GRANTS** Plaintiffs' Relief Motion and **DENIES** Defendant's Fees Motion.

I. BACKGROUND

The Court described the factual and procedural background to this case in detail in the Court's Order on Defendant's summary judgment motion on its 28 U.S.C. § 1498 defense, the relevant details of which are repeated below. (*See* "MSJ Order," Dkt. No. 58 at 2-6.) On August 17, 2020, Plaintiffs filed a Complaint in this Court accusing Defendant of infringing at least Claim 1 of the '763 Patent by "at least by making, using, offering to sell, and selling [the Mars Helicopter] in the United States." (Dkt. No. 1 ¶¶ 25-26.) On September 10, 2020, Defendant filed an Answer, which asserts throughout that "Plaintiffs have no remedy against AeroVironment due to the applicability of 28 U.S.C. § 1498[.]" (Dkt. No. 19 ¶ 1.)

The parties participated in a Rule 26(f) conference on November 17, 2020. (Dkt. No. 41-1, Ex. A.) On November 19, 2020, Plaintiffs served their First Set of Requests for Production of Documents. (Dkt. No. 40-8 ¶ 2; Dkt. No. 40-9.) On November 24, 2020, Defendant's counsel emailed Plaintiffs' counsel to inform them that Defendant intended "to move for early summary judgment on its defense under 28 U.S.C. § 1498" and requested that Plaintiffs identify any discovery they believed was necessary to evaluate its § 1498 defense. (*Id.*) On November 27, 2020, the parties filed a joint 26(f) report. (Dkt. No. 29.) In the report, Defendant stated that it sought "leave to file an early motion for summary judgment on its Section 1498 defense." (*Id.* at 9.) Plaintiffs' statement in the report responded to Defendant's arguments, but did not mention the Small Business Innovation Research ('SBIR') program. (*Id.* at 11-12.)

On December 12, 2020, the Court issued its Order Re: Jury/Court Trial requesting that the parties "meet and confer on Defendant's anticipated Section 1498 motion, and insofar as discovery may be necessary, they should seek to agree to conduct the relevant discovery first." (Dkt. No. 33 at 2.) The Court also stated, "If the parties cannot agree, Defendant may file an early motion for summary judgment on the Section 1498 defense only, and if Plaintiffs think they need discovery, they can seek a continuance pursuant to Fed. R. Civ. P. 56(d)." (*Id.*) The Court also set the deadline for the last date to hear a motion to amend the pleadings and add parties as February 12, 2021. (*Id.* at 3.)

On December 21, 2020, Defendant responded to Plaintiffs' First Set of Requests for Production of Documents. (Dkt. No. 40-8 ¶ 3; Dkt. No. 40-10.) Defendant declined to produce documents in response to many of the requests, stating, "Any discovery on the merits should proceed, if at all, only after the Court resolves AeroVironment's motion for summary judgment on its Section 1498 defense, consistent with Congress's intent 'to relieve private Government contractors from expensive litigation with patentees.'" (*Id.*)

On January 8, 2021, the parties met and conferred regarding what discovery needed to be conducted before Defendant brought its motion. (Dkt. No. 35-2 ¶ 8; Dkt. No. 40-8 ¶ 4.) “Plaintiffs agreed to outline in greater detail the reasons that discovery was necessary to respond to an anticipated summary judgment motion by Defendant” and provided its response on January 14, 2021. (Dkt. No. 40-8 ¶¶ 4–5.)

On February 3, 2021, Defendant responded to Plaintiffs’ January 14, 2021 letter, stating that it planned to file its Motion on February 12, 2021 if Plaintiffs did not offer to settle the case. (Dkt. No. 41-1 ¶ 5; *id.*, Ex. C.) On February 16, 2021, Defendant filed its Motion. (Dkt. No. 35.) On February 17, 2021, NASA filed a “Statement of Interest of the United States” stating that the United States granted its authorization and consent for Defendant’s alleged use and manufacture of patented inventions claimed in the ’763 Patent. (“Statement of Interest,” Dkt. No. 37.)

On February 16, 2021, Defendant moved for summary judgement in its favor on its 28 U.S.C. § 1498 defense. (Dkt. No. 35.) On March 5, 2021, Plaintiffs filed an opposition. (Dkt. No. 40.) On March 12, 2021, Defendant filed a reply. (Dkt. No. 41.) On March 22, 2021, Plaintiffs filed a sur-reply. (“Sur-reply,” Dkt. No. 47.) The same day Plaintiffs filed their sur-reply, Plaintiffs also moved for leave to file a first amended complaint and to join Lite Machines Corp. as a plaintiff. (Dkt. No. 46.) On April 2, 2021, Defendant filed an opposition. (Dkt. No. 56.) On April 9, 2021, Plaintiffs filed a reply. (Dkt. No. 57.)

On March 26, 2021, the Court held a hearing on Defendant’s summary judgment motion. (Dkt. No. 55.) When asked whether Defendant had any plans to sell the accused technology to a party other than the government, Defendant responded “I’m certainly not aware of any plans of that nature. The technology is the helicopter that is designed to fly on Mars. So, you know, it’s certainly not supported in the summary judgment record, but I would be surprised if that was going to be sold on any commercial market.” (*See* Dkt. No. 64 at 14:2–11.) On April 22, 2021, the Court granted Defendant’s summary judgment motion and denied Plaintiffs’ motion for leave to amend. (Dkt. No. 58.) Specifically, the Court found that Plaintiff’s arguments regarding the conflict between § 1498 and the SBIR program were unpersuasive, that Plaintiff failed to show that further discovery was necessary to decide the issue, and that Plaintiffs’ motion to amend was untimely. (*See generally id.*) On May 12, 2021, the Court entered judgment in favor of Defendant, finding Defendant to be the prevailing party and stating that Defendant must seek cost within 14 days after the entry of judgment. (Dkt. No. 61.)

On May 9, 2021, Defendant “appeared in a 60 Minute segment with Anderson Cooper and introduced ‘Terry,’ a terrestrial version of the Mars Helicopter Ingenuity that is manually controlled by a pilot with a hand controller.” (Dkt. No. 66 at 2.) On May 26, 2021, Plaintiff moved for relief from judgment or to alter the judgment in light of Defendant’s previously undisclosed “Terry” helicopter. (*See generally id.*) The same day, Defendant moved for fees and costs pursuant to the Court’s entry of judgment. (*See generally* Dkt. No. 67.)

II. LEGAL STANDARD

A. Fed. R. Civ. P. 59 and 60

Motions to alter a judgment or for reconsideration may be brought under Fed. R. Civ. P. (“Rule”) 59(e) or 60(b). *Fuller v. M.G. Jewelry*, 950 F.2d 1437, 1442 (9th Cir. 1991).

A Rule 59(e) motion to amend a judgment may be granted when (1) the judgment is based on manifest errors of law or fact, (2) the moving party presents newly discovered or previously unavailable evidence, (3) it is necessary to prevent manifest injustice, or (4) there is an intervening change in controlling law. *Turner v. Burlington N. Santa Fe R.R. Co.*, 338 F.3d 1058, 1063 (9th Cir. 2003); *McDowell v. Calderon*, 197 F.3d 1253, 1255 (9th Cir. 1999). Relief through Rule 59(e) generally is reserved for highly unusual circumstances. *School Dist. No. 1J, Multnomah County v. ACandS, Inc.*, 5 F.3d 1255, 1263 (9th Cir. 1993). Rule 59(e) is not a vehicle to rehash arguments previously presented, or to present “contentions which might have been raised prior to the challenged judgment.” *Costello v. United States*, 765 F. Supp. 1003, 1009 (C.D. Cal. 1991). A Rule 59(e) motion must be filed by 28 days after the entry of judgment.

Rule 60(b) allows for relief from a judgment or order only upon a showing of (1) mistake, inadvertence, surprise, or excusable neglect; (2) newly discovered evidence that by due diligence could not have been discovered before the court's decision; (3) fraud by the adverse party; (4) a void judgment; (5) a satisfied or discharged judgment; or (6) any other reason justifying relief. *See* Fed. R. Civ. P. 60(b). Subparagraph (6) requires a showing of extraordinary grounds for relief. *Twentieth Century-Fox Film Corp. v. Dunnahoo*, 637 F.2d 1338, 1341 (9th Cir. 1981). The mere belief that the court’s decision was wrong does not justify reconsideration. *Id.* A Rule 60(b) motion “must be made within a reasonable time – and for reasons (1), (2), and (3) no more than a year after entry of judgment or order or the date of the proceeding.”

Local Rule 7-18 provides that a motion for reconsideration may only be made because of:

- (a) a material difference in fact or law from that presented to the Court before such decision that in the exercise of reasonable diligence could not have been known to the party moving for reconsideration at the time of such decision, or
- (b) the emergence of new material facts or a change of law occurring after the time of such decision, or
- (c) a manifest showing of a failure to consider material facts presented to the Court before such decision.

A motion for reconsideration may not repeat any oral or written argument made in support of or in opposition to the original motion. *Id.* Indeed, “a mere attempt by [the moving party] to reargue its position by directing [the] court to additional case law and... argument[s] which [it] clearly could have made earlier, but did not ... is not the purpose of motions for reconsideration” *Yang Ming Marine Transp. Corp. v. Oceanbridge Shipping Int’l, Inc.*, 48 F. Supp. 2d 1049, 1057 (C.D. Cal. 1999).

III. ANALYSIS

A. Plaintiffs’ Motion for Relief from Judgment or to Alter the Judgment

Plaintiffs move for relief from judgment or to alter the judgment entered because of the newly discovered “Terry” helicopter that Defendant publicly showcased after judgment was filed. (*See generally* Dkt. No. 66.) Plaintiffs assert that Defendant never disclosed the “Terry” helicopter to Plaintiffs despite discovery requests directed to products related to the Mars Ingenuity helicopter. (*See id.* at 11-12.) Plaintiffs also argue that their concerns that the Defendant plans to sell the technology commercially are now more than speculation as Defendant’s statements to the media suggest that it may do so. (*See id.* at 12.) Further, Plaintiff requests that the Court permit discovery into products other than just the “Terry” helicopter to ensure that Defendant has no other products related to the Mars Ingenuity helicopter that it plans to sell commercially. (*See id.* at 14-15.) Finally, Plaintiffs request leave to amend its complaint to add its trade secret claims. (*See id.* at 15.)

Defendant responds that the “Terry” helicopter is also covered by § 1498 and even if it did disclose the “Terry” helicopter to Plaintiff sooner, it would not have changed the outcome of Defendant’s summary judgment motion. (*See* Dkt. No. 69 at 2-3.) Defendant asserts that the “Terry” helicopter was developed as part of the Mars Ingenuity program and “is intended for use for Government purposes, just like Ingenuity.” (*See id.* at 5.) Defendant also argues that “Terry was not completed until April 11, 2021, after the summary judgment hearing, and it is intended for research and demonstration purposes in support of United States Government program opportunities, not for commercial sale.” (*See id.* at 9.) Further, Defendant argues that Plaintiffs’ discovery requests were overly broad. (*See id.* at 9-10.)

In reply, Plaintiffs argue that Defendant spent funds “independent of any government contract or even proposal” on the “Terry” helicopter and thus, it was not for the government. (*See* Dkt. No. 71 at 1-2, 4-7.) Plaintiffs also argue that Defendant’s excuses for not disclosing the “Terry” during discovery are “both wrong and speculative.” (*See id.* at 2-3, 7-10.) Further, Plaintiffs argue that they are irreparably harmed by Defendant’s use of the “Terry” product, but do not explain how this is relevant in the context of Defendant’s § 1498 defense or its Relief Motion. (*See id.* at 3, 10-11.)

The Court finds that relief from judgment is appropriate. Defendant’s “Terry” helicopter is a “Terrestrial version of [the Mars Ingenuity Helicopter]” “built entirely by Aerovironment, not JPL,” and bears Defendant’s logo. (*See* Dkt. No. 66 at 8 (citing “Arlton Decl.,” Dkt. No. 66-1 ¶¶ 4-5 (citing Aerovironment, *Mars Ingenuity Press Event*,

Vimeo (May 13, 2021) <https://vimeo.com/548603486>) (hereinafter, “Ingenuity Press Event”)); *see also* Dkt. No. 66-2 (explaining that “Terry has an airframe identical to Ingenuity and that structure composites and mechanism were built from the same molds as the Mars version.”).) Defendant did not disclose the “Terry” helicopter to Plaintiffs or publicly until after it submitted its proposed judgement to the Court, and Defendant does not meaningfully dispute that it is newly discovered evidence. Further, the “Terry” helicopter is clearly related to the Mars Ingenuity project and should have at least been disclosed to Plaintiffs. That Plaintiffs’ discovery requests were overly broad and that “Terry” was not completed until April 12, 2021, does not excuse Defendant from failing to disclose that the “Terry” helicopter was in development.

The Court also finds that Plaintiffs have demonstrated the potential for the “Terry” helicopter to be sold for purposes other than “for the government” as with the Mars Ingenuity helicopter. Defendant states that it developed “Terry” for educational purposes and for future Mars helicopter research. (*See* “Keennon Decl.,” Dkt. No. 69-1 ¶ 6; *see also* Ingenuity Press Event at 25:08-28.) But despite these statements, Defendant stated that it sells products commercially and it plans to use the technology developed through the Ingenuity project in commercial applications. (*See* Ingenuity Press Event at 3:50-4:10.) Thus, Plaintiffs have shown that their concern that Defendant may sell its helicopter technology commercially is more than mere speculation. Given the potential for Defendant to sell the “Terry” helicopter or other similar helicopters commercially, the Court will permit Plaintiffs limited discovery to determine whether Defendant intends to do so and to what extent. However, discovery will also be limited only to those helicopter products that were developed from the Mars Ingenuity program or that incorporate technology developed in that program.

The Court agrees with Defendant, however, that to the extent Defendant has no intention of selling the “Terry” helicopter or other similar helicopter commercially, then these helicopters are also subject to § 1498. The “Terry” helicopter was developed as part of the Mars Ingenuity helicopter program and thus is covered under the government’s same broad grant of authorization and consent that the Mars Ingenuity helicopter received. The uses of the “Terry” helicopter for “educational purposes” and “future Mars helicopter research,” as well as any sales to the government, would be “for the government” or at least *de minimis* non-governmental uses. *See Saint-Gobain Ceramics & Plastics, Inc. v. II-VI Inc.*, 369 F. Supp. 3d 963, 977–82 (C.D. Cal. 2019) (pre-contractual development activities were covered by § 1498 and marketing activities were *de minimis*). Unless Plaintiffs show that Defendant sold or offered to sell these helicopters commercially, or otherwise used them commercially in a substantial way, the Court will reaffirm its grant of summary judgment in favor of Defendant.

Accordingly, the Court **GRANTS** Plaintiffs’ Relief Motion. The Court also **DENIES** Plaintiffs’ renewed request for leave to amend to add trade secret claims at this time.

B. Defendant’s Motion for Attorney’s Fees

Because the Court grants Plaintiffs' motion for relief from judgment, the Court declines to consider Defendant's motion for attorney's fees. Accordingly, the Court **DENIES** Defendant's motion for attorney's fees.

IV. CONCLUSION

For the foregoing reasons, the Court **GRANTS** Plaintiffs' Relief Motion and **DENIES** Defendant's Fees Motion. The Judgment (Dkt. No. 61) is hereby **VACATED** and the Court **ORDERS** the case **REOPENED** for the limited purpose of addressing the newly-discovered evidence (the Terry helicopter). Because the Court grants Plaintiffs' Relief Motion, the Court declines to consider Plaintiffs' evidentiary objections. (*See* Dkt. No. 72.) The parties shall also meet and confer and produce a joint status report addressing any discovery needs on or before July 9, 2021. The joint report should identify requested discovery and should include a discovery schedule, as well.

IT IS SO ORDERED.

UNITED STATES DISTRICT COURT
CENTRAL DISTRICT OF CALIFORNIA

CIVIL MINUTES - GENERAL

Case No.: 2:20-cv-07438-AB-GJS

Date: August 15, 2023

Title: *Paul E. Arlton et al v. AeroVironment, Inc.*

Present: The Honorable **ANDRÉ BIROTTE JR., United States District Judge**

Carla Badirian
Deputy Clerk

N/A
Court Reporter

Attorney(s) Present for Plaintiff(s):
None Appearing

Attorney(s) Present for Defendant(s):
None Appearing

Proceedings: [In Chambers] Further Order Regarding Defendant’s Motion for Summary Judgement [Dkt. Nos. 35, 119, 125]

This matter arises from alleged patent infringement by the Mars Helicopter, Ingenuity. In February 2021, Defendant AeroVironment, Inc. (“AeroVironment” or “Defendant”), the contractor who provided Ingenuity to the government, moved for summary judgement on its 28 U.S.C. § 1498 contractor-immunity defense. (“Motion,” Dkt. No. 35.) The Court found that § 1498 shields Defendant’s activities concerning Ingenuity from infringement liability and granted the Motion. (“MSJ Order,” Dkt. No. 58.) About two months later, after Plaintiffs, Paul E. Arlton and David J. Arlton (collectively, “the Arltons” or “Plaintiffs”), discovered new evidence that Defendant made “Terry,” an earth-based version of Ingenuity, the Court vacated the judgement and ordered the case reopened to allow Plaintiffs to take discovery. (Dkt. No. 77.) After examining whether Defendant was selling or making substantial commercial use of Terry, Plaintiffs filed their renewed opposition to the Motion for summary judgement. (“Opp.,” Dkt. Nos. 119, 131 (sealed).) Defendant filed a brief in support of reaffirming summary judgement. (“Reply,” Dkt. Nos. 125, 130 (sealed).)

After considering the parties' arguments, the Court again **GRANTS** summary judgment in favor of Defendant under § 1498 and **DENIES** Plaintiffs' request for further relief.

I. BACKGROUND

The Court recited the factual and procedural background of this case in detail in the MSJ Order. (*See* Dkt. No. 58 at 2-6.) The Court incorporates that discussion by reference. Because the parties are familiar with this case, the Court provides a summary only.

Three years ago, Plaintiffs filed a Complaint in this Court accusing Defendant of infringing U.S. Patent No. 8,042,763 (the "'763 Patent"), which is titled "Rotary Wing Vehicle," by making, using, offering to sell, and selling the Mars Helicopter. (Dkt. No. 1 ¶¶ 25-26.) In its Answer, Defendant averred that "Plaintiffs have no remedy against AeroVironment due to the applicability of 28 U.S.C. § 1498[.]" (Dkt. No. 19 ¶ 1.) The Court allowed Defendant to file an early motion for summary judgment on this defense, which confers patent infringement immunity on government contractors for infringing work done at the behest of the government. (Dkt. No. 33 at 2.)

In February 2021, Defendant filed its Motion. (Dkt. No. 35.) At that time, NASA filed a "Statement of Interest of the United States" stating that the United States granted its authorization and consent for Defendant's alleged use and manufacture of patented inventions claimed in the '763 Patent. ("Statement of Interest," Dkt. No. 37.) Plaintiffs opposed the Motion, Defendant replied, and Plaintiffs filed a sur-reply. (*See* Dkt. Nos. 40, 41, 47.) After holding a hearing on the Motion, the Court granted it. (*See* MSJ Order.)

Shortly thereafter, Defendant introduced Terry, a terrestrial version of the Mars Helicopter Ingenuity that is manually controlled by a pilot with a hand controller. (Dkt. No. 66 at 2.) In view of this new information, Plaintiff moved for relief from judgment or to alter the judgment. The Court granted Plaintiffs' motion, vacated the judgement, and ordered the case reopened to allow Plaintiffs to address the new evidence regarding Terry. (Dkt. No. 77 at 7.)

After a lengthy discovery period, the Court set a discovery cut-off date and set a briefing schedule for Plaintiffs to file a supplemental brief in support of denial of summary judgment, and for Defendant to file a supplemental brief in support of reaffirming the grant of summary judgment. (Dkt. No. 116.) The Court provided

that, upon receipt of the briefs, the matter would stand submitted without a hearing. (*Id.*)

II. LEGAL STANDARDS

A. Summary Judgement

“Summary judgment is appropriate in a patent case, as in other cases, when there is no genuine issue as to any material fact and the moving party is entitled to judgment as a matter of law.” *Nike Inc. v. Wolverine World Wide, Inc.*, 43 F.3d 644, 646 (Fed. Cir. 1994); Fed. R. Civ. P. 56(c) (motion for summary judgment must be granted when “the pleadings, the discovery and disclosure materials on file, and any affidavits show that there is no genuine issue as to any material fact and that the movant is entitled to judgment as a matter of law.”); *Anderson v. Liberty Lobby, Inc.*, 477 U.S. 242, 247-48 (1986). The moving party bears the initial burden of identifying the elements of the claim or defense and evidence that it believes demonstrates the absence of an issue of material fact. *Celotex Corp. v. Catrett*, 477 U.S. 317, 323 (1986).

“Where the record taken as a whole could not lead a rational trier of fact to find for the nonmoving party, there is no ‘genuine issue for trial.’” *Matsushita Elec. Indus. Co., Ltd. v. Zenith Radio Corp.*, 475 U.S. 574, 587 (1986). The Court must draw all reasonable inferences in the nonmoving party’s favor. *In re Oracle Corp. Sec. Litig.*, 627 F.3d 376, 387 (9th Cir. 2010) (citing *Anderson*, 477 U.S. at 255). Nevertheless, inferences are not drawn out of thin air, and it is the nonmoving party’s obligation to produce a factual predicate from which the inference may be drawn. *Richards v. Nielsen Freight Lines*, 602 F. Supp. 1224, 1244-45 (E.D. Cal. 1985), *aff’d*, 810 F.2d 898 (9th Cir. 1987). “[M]ere disagreement or the bald assertion that a genuine issue of material fact exists” does not preclude summary judgment. *Harper v. Wallingford*, 877 F.2d 728, 731 (9th Cir. 1989).

B. 28 U.S.C. § 1498

Section 1498 is an affirmative defense, not a jurisdictional bar. *Manville Sales Corp. v. Paramount Sys., Inc.*, 917 F.2d 544, 554 (Fed. Cir. 1990). Section 1498 “relieves a third party from patent infringement liability, and it acts as a waiver of sovereign immunity and consent to liability by the United States.” *Madey v. Duke Univ.*, 307 F.3d 1351, 1359 (Fed. Cir. 2002). A § 1498 affirmative defense is a highly factual determination, whereby a defendant must establish that “(1) the [infringing] use is ‘for the Government’; and (2) the [infringing] use is ‘with the authorization

and consent of the Government.” *Sevenson Env’l. Servs., Inc. v. Shaw Envtl., Inc.*, 477 F.3d 1361, 1365 (Fed. Cir. 2007). “The burden is initially upon the movant to establish the absence of any genuine issue of material fact and entitlement to judgment as a matter of law.” *Crater Corp. v. Lucent Techs.*, 255 F.3d 1361, 1366 (Fed. Cir. 2001) (citing *Celotex*, 477 U.S. at 323–34).

C. Analysis

In the MSJ Order, the Court agreed with Defendant that section 1498 shields Defendant from infringement liability for its work on the Mars Helicopter Ingenuity. The Court ruled that no disputed material facts exist concerning whether Defendant’s work on the helicopter was “for the government” and done with the government’s “authorization and consent.” (MSJ Order at 9-13.) In the Order granting relief from judgment, the Court advised that it would reinstate summary judgment in Defendant’s favor unless Plaintiffs can “show that Defendant sold or offered to sell these helicopters commercially, or otherwise used them commercially in a substantial way.” (Dkt. No. 77 at 6.) Because Plaintiffs have failed to do so, the Court again **GRANTS** Defendant’s request for summary judgment.

Plaintiffs acknowledge that “the question is whether AeroVironment, ‘used [the helicopters] commercially in a substantial way,’ and not simply for educational purposes or future Mars helicopter research, which the Court concluded would be *de minimis*.” (Opp. at 15 (quoting Dkt. No. 77 at 6).) To answer this question, Plaintiffs aver that “AeroVironment clearly intended to use, and did use Terry commercially to draw market attention to its technical prowess and position itself alongside aviation industry giants,” and used the patented technology to “build brand recognition and garner coveted aerospace industry awards such as the Collier Trophy,” none of which Plaintiffs contend is “*de minimis*.” (*Id.* at 15.) Thus, Plaintiffs argue that summary judgment is unwarranted in view of Defendant’s “pervasive and widespread marketing” of the technology. (*Id.*)

More specifically, Plaintiffs aver that this “widespread commercial use” includes Defendant “marketing itself far and wide as the developer” of Ingenuity, and “using Terry to leverage [its] business and technical reputation.” (*Id.* at 15-16.) In support of this theory, Plaintiffs identify Defendant’s alleged commercial use of the technology to include using it to “gain the interest of SpaceX, UP.Partners, Impulse Space and UAVSI attendees (among others);” presenting it to UP.Partners, an early-stage venture capital firm comprised of officials, executives and aerospace enthusiasts; demonstrating Terry at the Wright Brothers National Memorial; and articulating “an ongoing plan to leverage the helicopter technology AeroVironment

used for Ingenuity in the private sector.” (*See id.* at 8-12.) Plaintiffs aver that Defendant has also used it “to obtain additional projects,” such as “assisting Applied Physics Laboratory with a study of multi-rotor co-axial blades, in connection with Johns Hopkins work on a NASA Mission to Titan,” and to obtain prestigious industry awards. (*Id.* at 12-13.)

Defendant responds that Plaintiffs have failed to show any substantial commercial use of the accused technology. (Opp. at 7.) Setting aside the Ingenuity-focused events that the Court already deemed insufficient, Defendant argues that the Terry-related activities on which Plaintiffs rely cannot constitute infringing use because Defendant was using Terry as a proxy for Ingenuity, *i.e.*, to discuss or demonstrate the Mars Helicopter because the actual helicopter is millions of miles away on Mars. (*Id.* at 9-10.) This includes Defendant’s presentation at AUVSI, “Flying on Mars: Development of the Ingenuity Mars Helicopter.” (*Id.* at 10.) Similarly, Defendant argues that the industry recognition it received was based on its work on Ingenuity, which is protected under § 1498. (*Id.* at 11.) This also includes various educational and public service events such as “demonstrations of Terry at the Wright Brothers National Memorial (a National Park Service event), at Syracuse University (an educational institution), for Petter Muren (Mr. Keennon’s personal friend, and for students at the Naval Test Pilot School (a United States Government entity).” (*Id.* at 12 (citation omitted).)

Finally, Defendant argues that, to the extent any of its marketing-related activities can be “use” under the Patent Act, they are covered by the de minimis use exception. (*Id.* at 12-13.) This category includes a proposed meeting with Elon Musk that never happened; cursory discussions with a potential commercial space partner that terminated quickly; and the presentation to UP.Partners at which Defendant did not intend to sell Terry and which resulted in no proposed or actual investment. (*Id.* at 13-14.) Defendant avers it is not aware of anyone who has “developed a business relationship” with it because of any presentation showcasing the accused technology. (*Id.* at 14.) Relatedly, Defendant avers that an internal document summarizing a forward-looking potential five-year plan is speculative and does not represent any action taken. (*Id.*)

The parties do not dispute that Defendant never offered to sell or sold the accused technology to another entity. Rather, they dispute whether Defendant’s non-sales activities constitute substantial commercial use. To avoid summary judgment on this question, Plaintiffs must show a disputed issue of material fact concerning whether AeroVironment’s use of the protected technology is both non-governmental and not de minimis. *See Saint-Gobain Ceramics & Plastics, Inc. v. II-VI Inc.*, 369 F.

Supp. 3d 963, 981 (C.D. Cal. 2019). But the “use” identified by Plaintiff is either governmental (*i.e.*, “for” or “authorized by” the government), or non-actionable.

First, much of the use identified by Plaintiffs relates to Defendant’s work on Ingenuity, which relates to the protected activity that was done for and authorized by the government and is shielded by § 1498. (*See* MSJ Order.) This includes Defendant’s AUVSI (“Flying on Mars: Development of the Ingenuity Mars Helicopter”) presentation, and education and public service events that presented Terry as a proxy for Ingenuity (*e.g.*, Wright Brother’s National Memorial, Syracuse University, Naval Test Pilot School). It also includes industry awards Defendant received for its work on Ingenuity.

By arguing that these activities fall outside the scope of § 1498, Plaintiffs advocate for a rule that government contractors are prohibited from discussing work they did for the government where the work itself is subject to § 1498. Plaintiffs present no authority for this proposition. Indeed, imposing this rule would run contrary to the purpose of § 1498, which was implemented “to permit the government to purchase goods or services for the performance of governmental functions without the threat that the work would not be carried out because its supplier or contractor was enjoined from or feared a suit for infringement of a patent.” *Windsurfing Int’l, Inc. v. Ostermann*, 534 F. Supp. 581, 587 (S.D.N.Y. 1982). If § 1498 protection came with a gag order preventing contractors from discussing their successful work for the government, it would disincentivize them to work with the government. The Court declines to impose such a rule.¹

Second, the remaining activities identified by Plaintiffs are either non-infringing or fall under the de minimis exception that applies in the § 1498 context. In this context, “[i]f the defendant’s nongovernmental activity is sufficiently limited, the court may dismiss the whole action on the principle of de minimis non curat lex (‘the law does not concern itself about trifles’).” *Saint-Gobain*, 369 F. Supp. 3d at 981 (quoting 5 Chisum on Patents § 16.06 (2019)) (dismissing suit under § 1498 when, setting aside government use, defendants produced single infringing sapphire sheet for an industry trade show and to be photographed for plaintiff’s website, finding this use de minimis and non-actionable).

Construing the facts in the light most favorable to Plaintiffs as the non-

¹ Even if these Ingenuity-proxy activities were not themselves shielded by § 1498, the Court would find them non-actionable or de minimis for the same reasons explained below with respect to other Terry activities.

movants, Defendant's presentation to UP.Partners, at which Defendant did not intend to sell Terry and which resulted in no investment or other transaction, and Defendant's engineer's demonstration of Terry to a personal friend, are de minimis. *See id.* at 981; *compare Med. Sols., Inc. v. C Change Surgical LLC*, 541 F.3d 1136, 1140 (Fed. Cir. 2008) (collecting cases that found "the mere demonstration or display of an accused product, even in an obviously commercial atmosphere is not an act of infringement for purposes of [35 U.S.C.] § 271(a)," and finding no infringing use where product was displayed at trade show but not put into service) (internal quotations omitted) *with Raymond Eng'g, Inc. v. Miltope Corp.*, No. 85 Civ. 2685, 1986 WL 488, at *5 (S.D.N.Y. May 23, 1986) (displaying accused product "at two trade shows for military hardware which are open to the public and attended by representatives of foreign countries" does not amount to private, commercial usage of the item to overcome the § 1498 defense).

The other activities on which Plaintiffs rely would not be actionable even outside the § 1498 context. For example, a proposed but never commenced meeting to discuss the accused technology, a discussion with a potential commercial business partner that never led anywhere, and an internal, forward-looking five-year plan about potential commercial activities do not constitute "use" for patent infringement purposes. *See* 35 U.S.C. § 271. Likewise, they also cannot be infringing where § 1498 applies. *See, e.g., BAE Sys. Info. & Elec. Sys. Integration Inc. v. Aeroflex Inc.*, No. CIV. 09-769, 2011 WL 3474344, at *12 (D. Del. Aug. 2, 2011) (§ 1498 applied where contractor submitted proposal to commercial customer but ended up not selling the product).

Plaintiffs argue there is no de minimis exception to infringement, even in the context of § 1498. (*See* Opp. at 20-21.) But the weight of authority considering this affirmative defense—including cases in this district—acknowledges such an exception. *See, e.g., Saint-Gobain*, 369 F. Supp. 3d at 981 ("Multiple courts have found trivial, non-governmental infringement to constitute de minimis infringement do not bar dismissal, pursuant to a § 1498 defense.") (collecting cases).

In sum, Plaintiffs have failed to show any offers for sale or commercial sales of the accused technology. And the activities on which they rely either relate to discussing or demonstrating the use protected by § 1498; are de minimis under § 1498; or are nonactionable in any event. Evidence showing that AeroVironment *might* leverage Ingenuity and Terry for commercial applications in the future is insufficient to show substantial commercial use of the accused technology right now. *BAE Sys.*, 2011 WL 3474344, at *12 ("[w]here no sales have occurred, speculation about future non-US government sales are just that: speculation."). Should

AeroVironment make any non-government-approved offers to sell or sales of the accused technology, Plaintiffs may bring a suit based on that non-protected, commercial activity.

Lastly, the Court observes that Plaintiffs have filed an infringement action in the Court of Federal Claims, which is the appropriate path to relief when § 1498 applies. The Court is unable to afford further relief in this context where Plaintiffs have not identified any commercial activity that falls outside of § 1498 and would be actionable under § 287. Thus, the Court **DENIES** Plaintiffs' request for further relief, including revising its decision concerning leave to amend.

D. CONCLUSION

For the foregoing reasons, the Court again **GRANTS** summary judgement to Defendant and **DENIES** Plaintiffs' request for further relief. Within 14 days of this Order, Defendant shall file an updated proposed Judgment reflecting this ruling. Plaintiffs may file any objection to the form of judgment within 7 days of its filing.

IT IS SO ORDERED.

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JS-6

**UNITED STATES DISTRICT COURT
CENTRAL DISTRICT OF CALIFORNIA**

PAUL E. ARLTON, an individual and
DAVID J. ARLTON, an individual,

Plaintiffs,

v.

AEROVIRONMENT, INC. a Delaware
corporation,

Defendant.

Case No. 2:20-cv-07438-AB (GJSx)

[Assigned to the Hon. André Birotte Jr.]

JUDGMENT

20 Defendant AeroVironment, Inc.’s (“AeroVironment” or “Defendant”) Motion
21 for Summary Judgment was initially heard by this Court on March 6, 2021. After
22 taking the matter under submission, the Court entered an Order on April 22, 2021,
23 granting AeroVironment’s Motion for Summary Judgment in its entirety. By way of
24 the same Order, the Court denied Plaintiffs Paul E. Arlton’s and David J. Arlton’s
25 (“Plaintiffs”) Motion for Leave to File a First Amended Complaint. At Plaintiffs’
26 request, through their Motion for Relief from Judgment based on Defendant’s
27 previously undisclosed “Terry” helicopter, that judgment was subsequently vacated,
28 and the case was reopened to allow Plaintiffs to take additional discovery into whether
AeroVironment sold or offered to sell certain helicopters commercially or otherwise

1 used them commercially in a substantial way. Following additional discovery and
2 briefing, the Court again Granted AeroVironment’s Motion for Summary Judgment on
3 August 15, 2023, and Denied Plaintiffs’ request for further relief. Having granted
4 AeroVironment’s Motion for Summary Judgment in its entirety:

5 **IT IS HEREBY ORDERED, ADJUDGED, AND DECREED** that Summary
6 Judgment be entered in favor of AeroVironment and against Plaintiffs on Counts I, II,
7 and III. Plaintiffs take nothing against AeroVironment.

8 Further, AeroVironment is the prevailing party pursuant to Federal Rules of
9 Civil Procedure, Rule 54(d) and Local Rule 54, and may be awarded costs through an
10 Application to the Clerk to Tax Costs.

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12 Dated: September 13, 2023



André Birotte Jr.
United States District Judge

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(12) **United States Patent**
Arlton et al.

(10) **Patent No.:** **US 8,042,763 B2**
 (45) **Date of Patent:** **Oct. 25, 2011**

(54) **ROTARY WING VEHICLE**
 (76) Inventors: **Paul E. Arlton**, West Lafayette, IN (US);
David J. Arlton, West Lafayette, IN (US)

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(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: **12/872,622**

(22) Filed: **Aug. 31, 2010**

(65) **Prior Publication Data**
 US 2011/0006166 A1 Jan. 13, 2011

FOREIGN PATENT DOCUMENTS

EP 1 384 662 1/2004
 FR 2 735 200 12/1996
 JP 2002-316699 10/2002
 WO 03/059735 7/2003

Related U.S. Application Data

(62) Division of application No. 11/105,746, filed on Apr. 14, 2005, now Pat. No. 7,789,341.

(51) **Int. Cl.**
B64C 27/08 (2006.01)

(52) **U.S. Cl.** **244/17.23; 244/17.25**

(58) **Field of Classification Search** 244/17.11,
 244/17.13, 17.21, 17.23, 17.25; 416/124,
 416/125, 127, 129, 130; 446/36, 37
 See application file for complete search history.

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Primary Examiner — Joshua Michener
 (74) *Attorney, Agent, or Firm* — Barnes & Thornburg LLP

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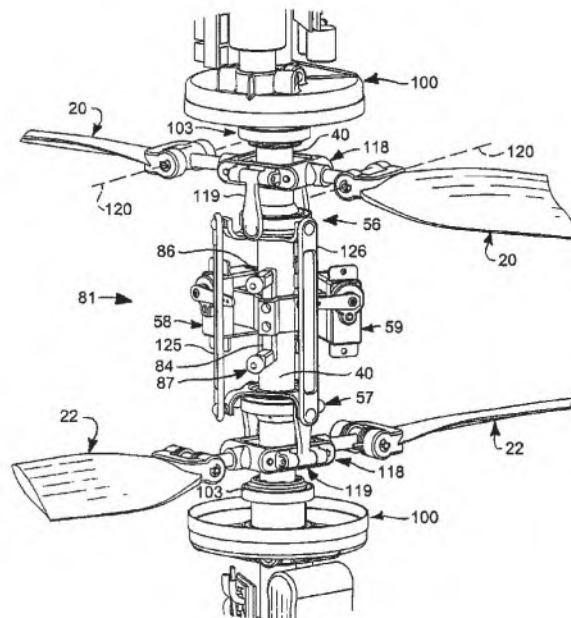
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(57) **ABSTRACT**

A rotary wing vehicle includes a body structure having an elongated tubular backbone or core, and a counter-rotating coaxial rotor system having rotors with each rotor having a separate motor to drive the rotors about a common rotor axis of rotation. The rotor system is used to move the rotary wing vehicle in directional flight.

9 Claims, 29 Drawing Sheets



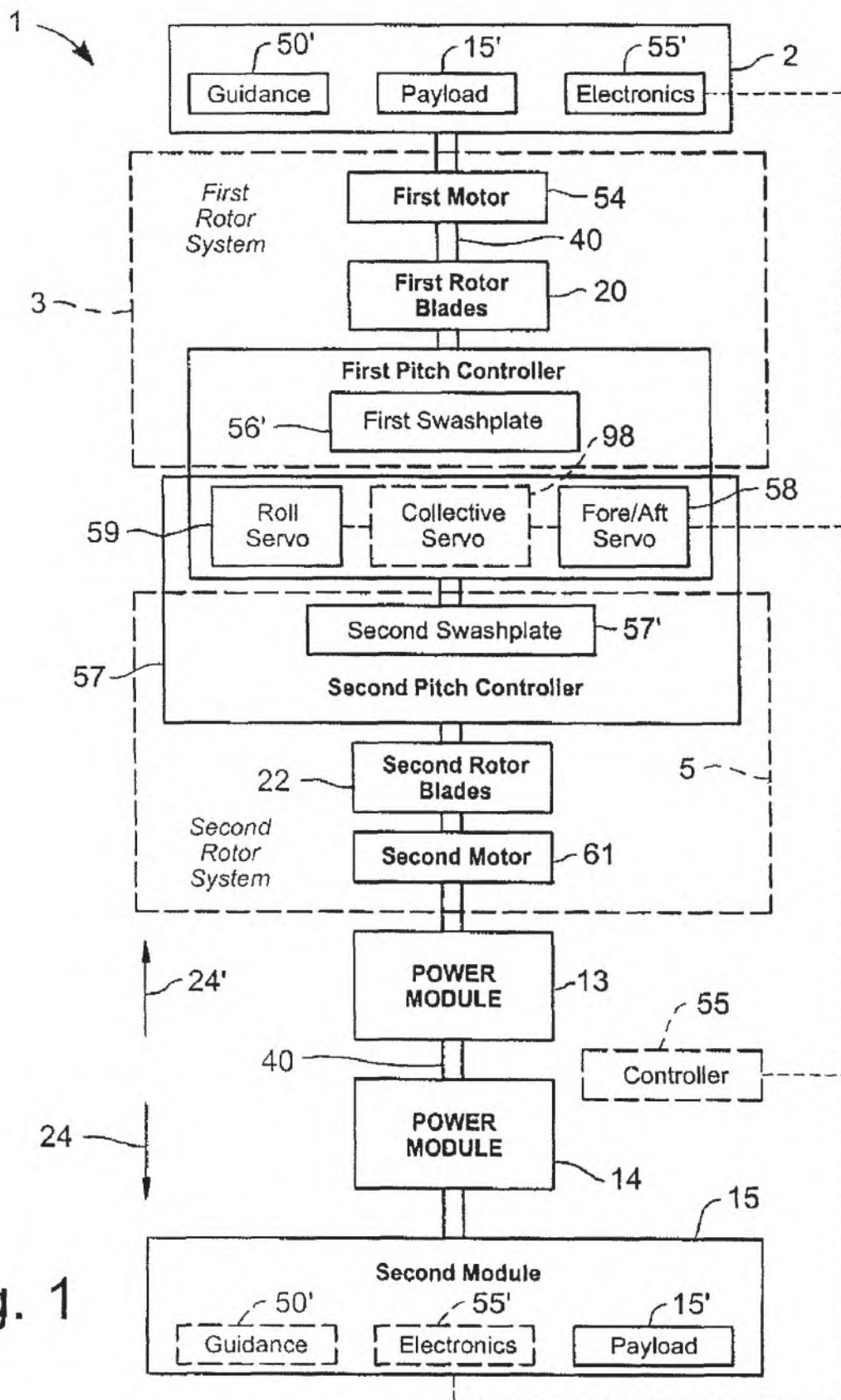


Fig. 1

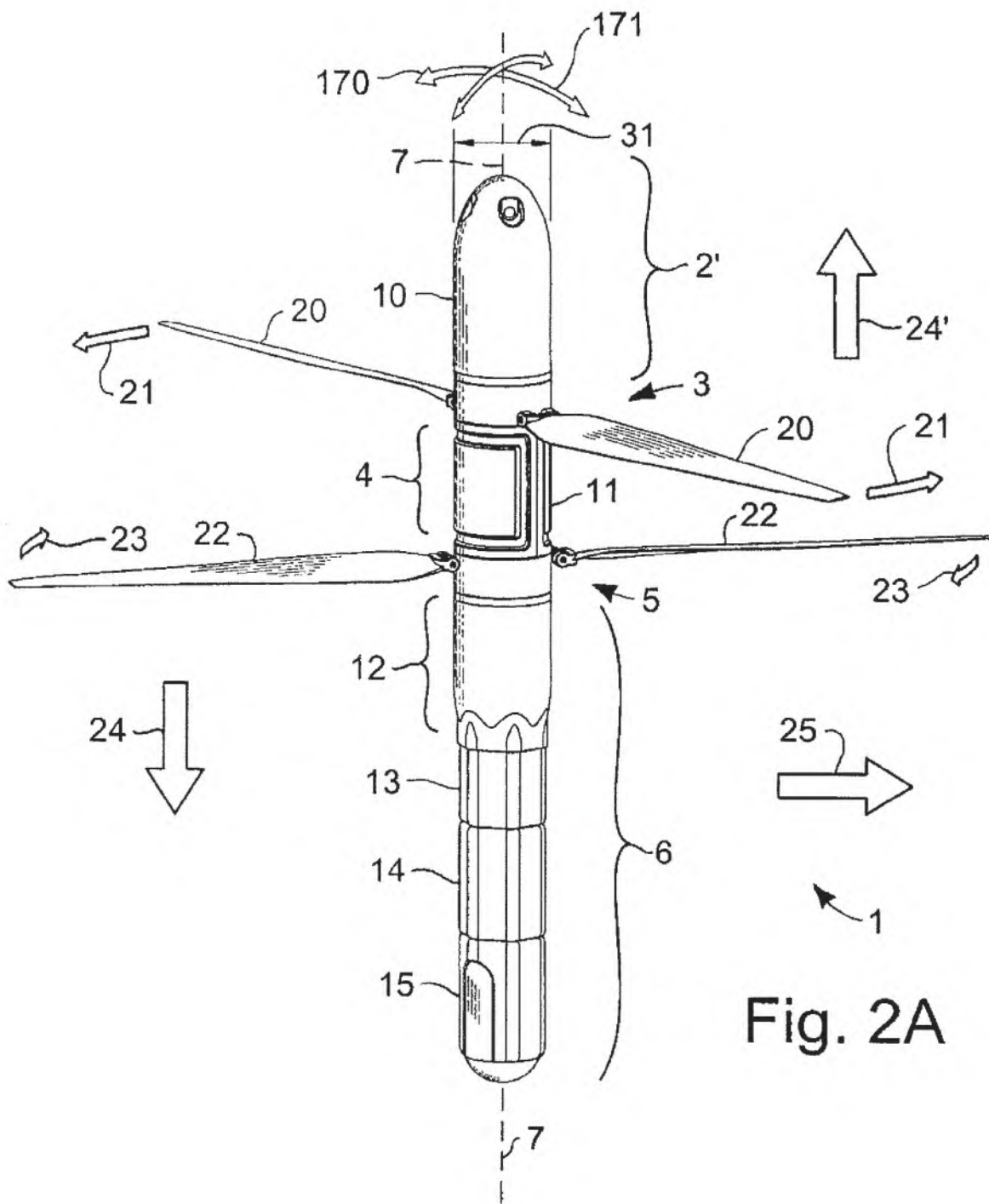


Fig. 2A

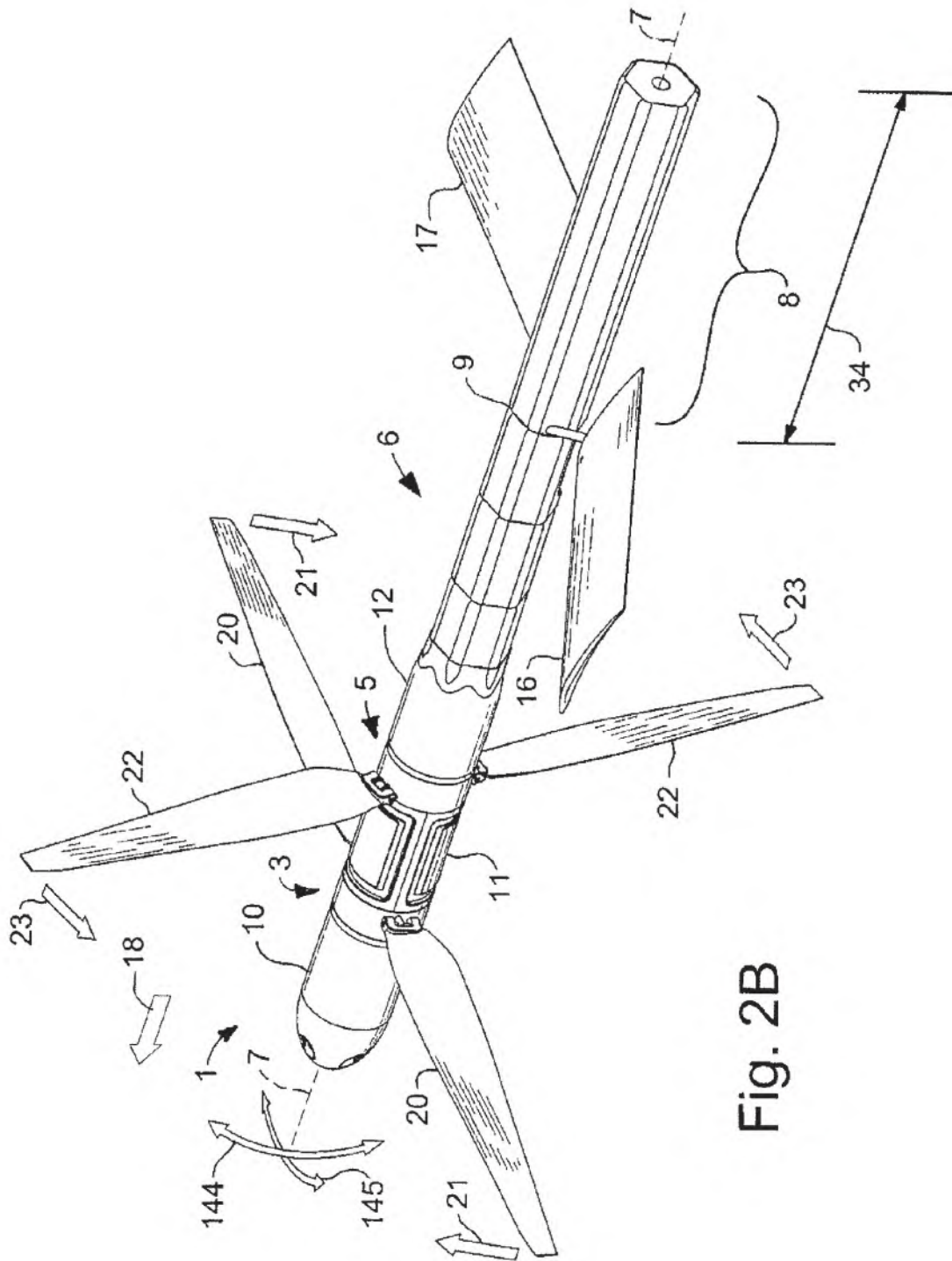


Fig. 2B

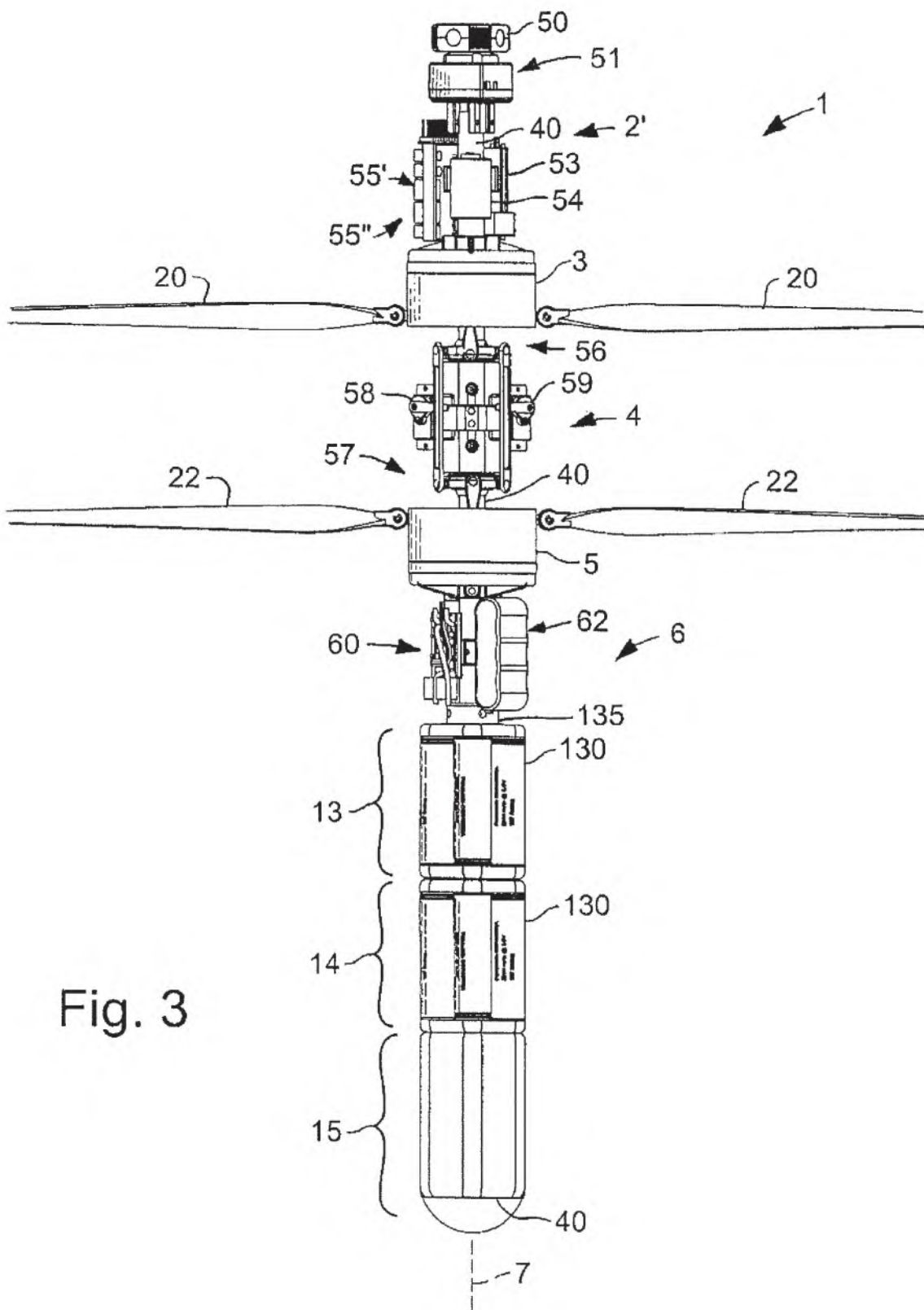


Fig. 3

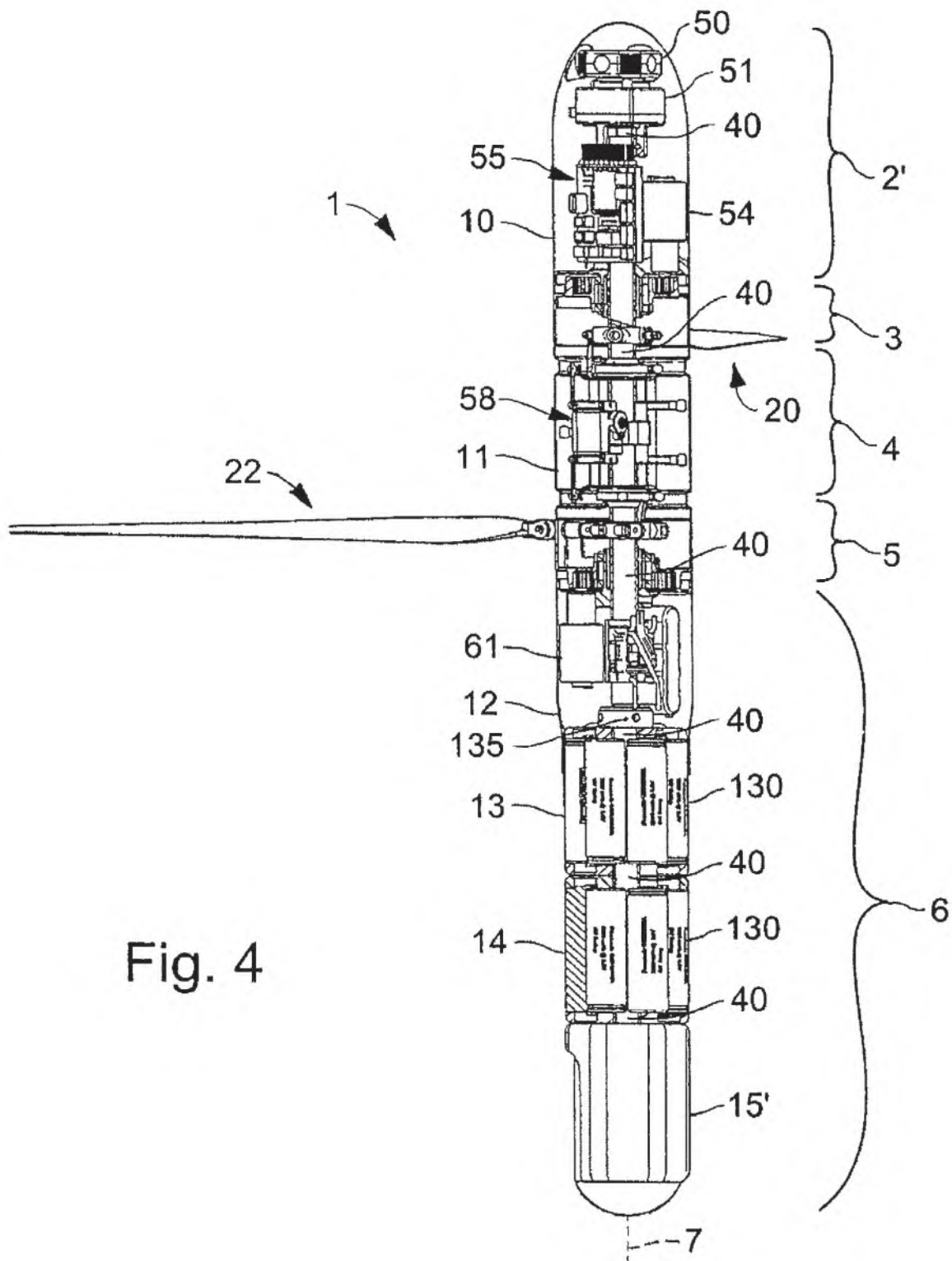


Fig. 4

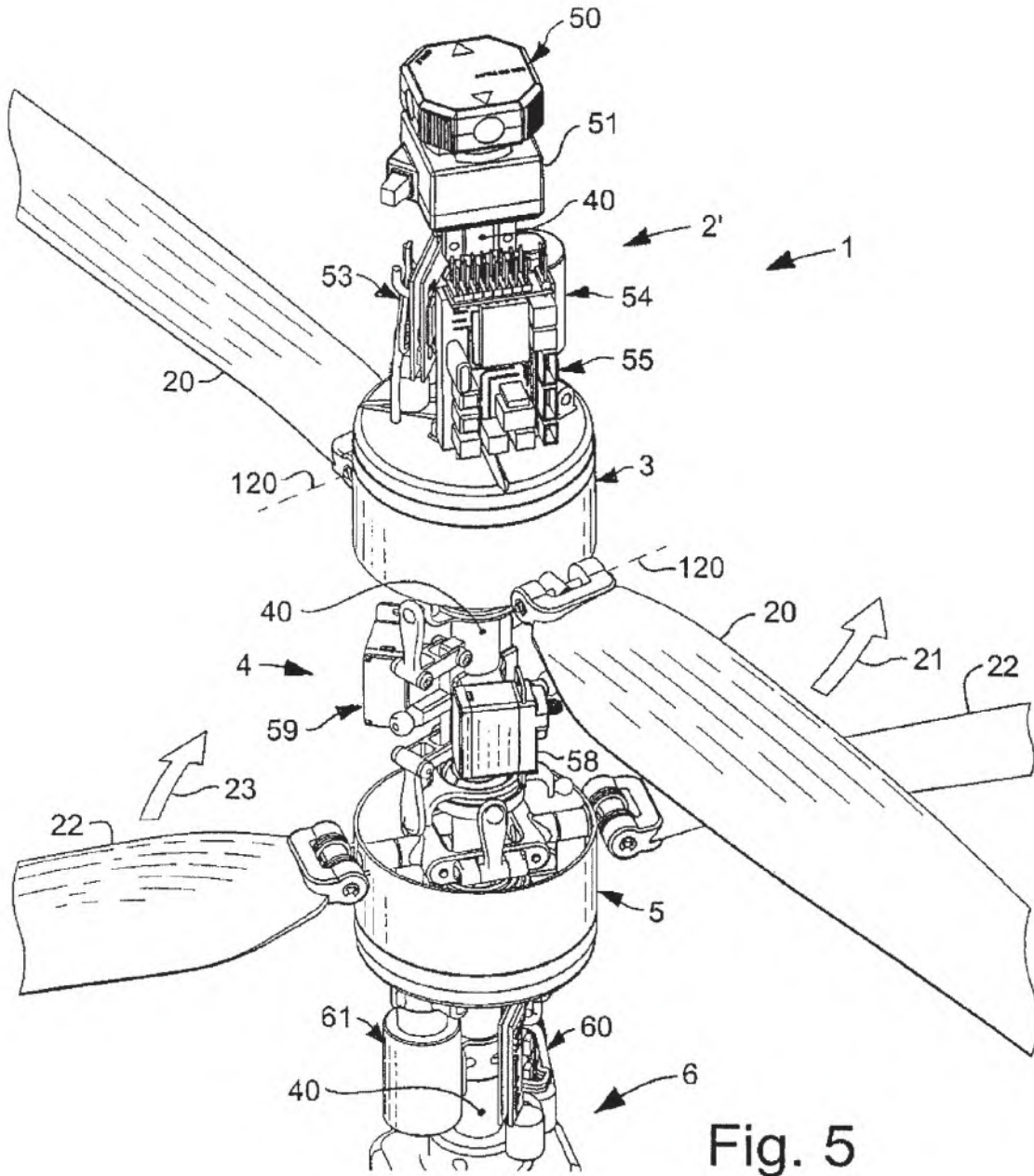


Fig. 5

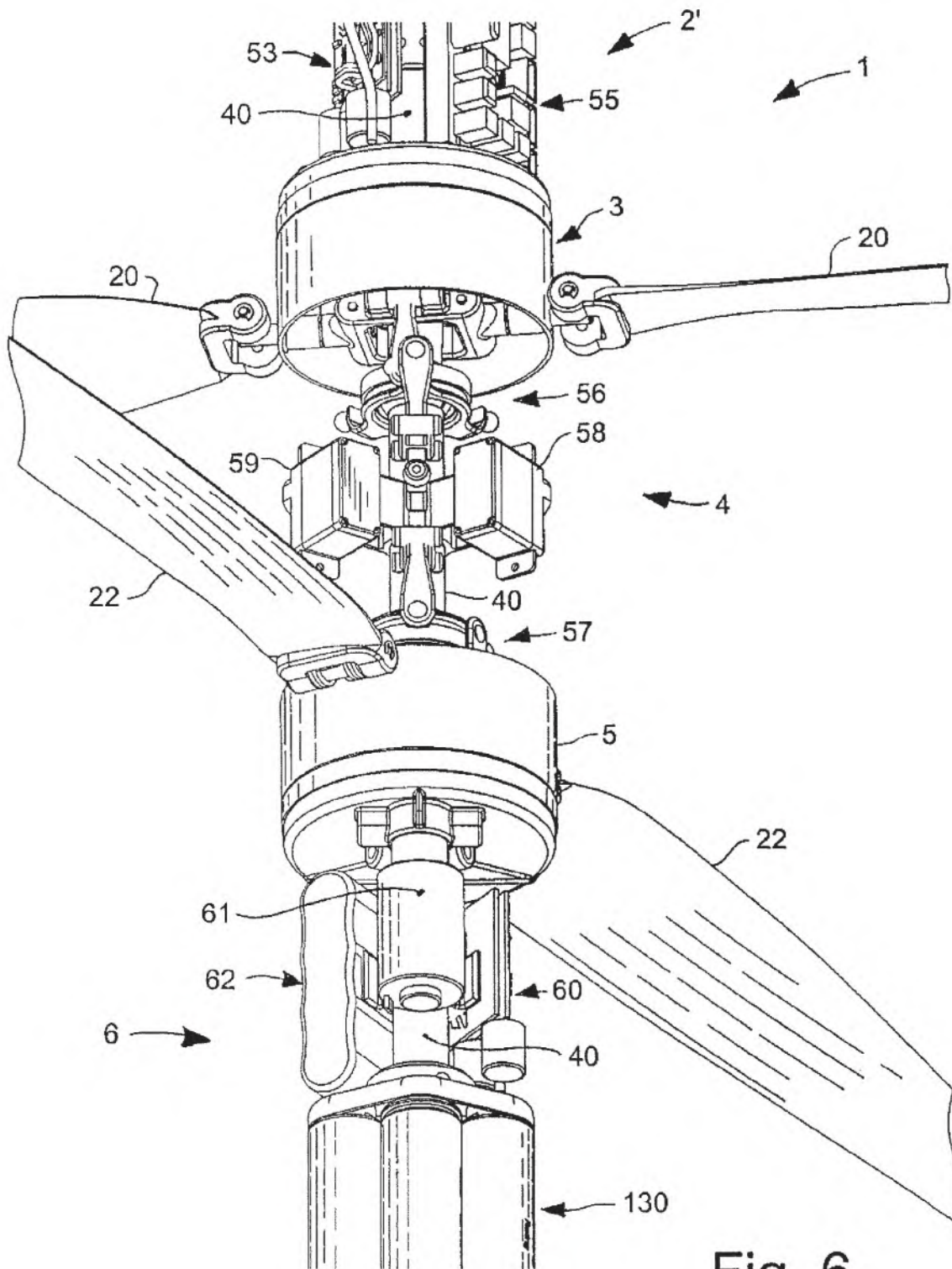
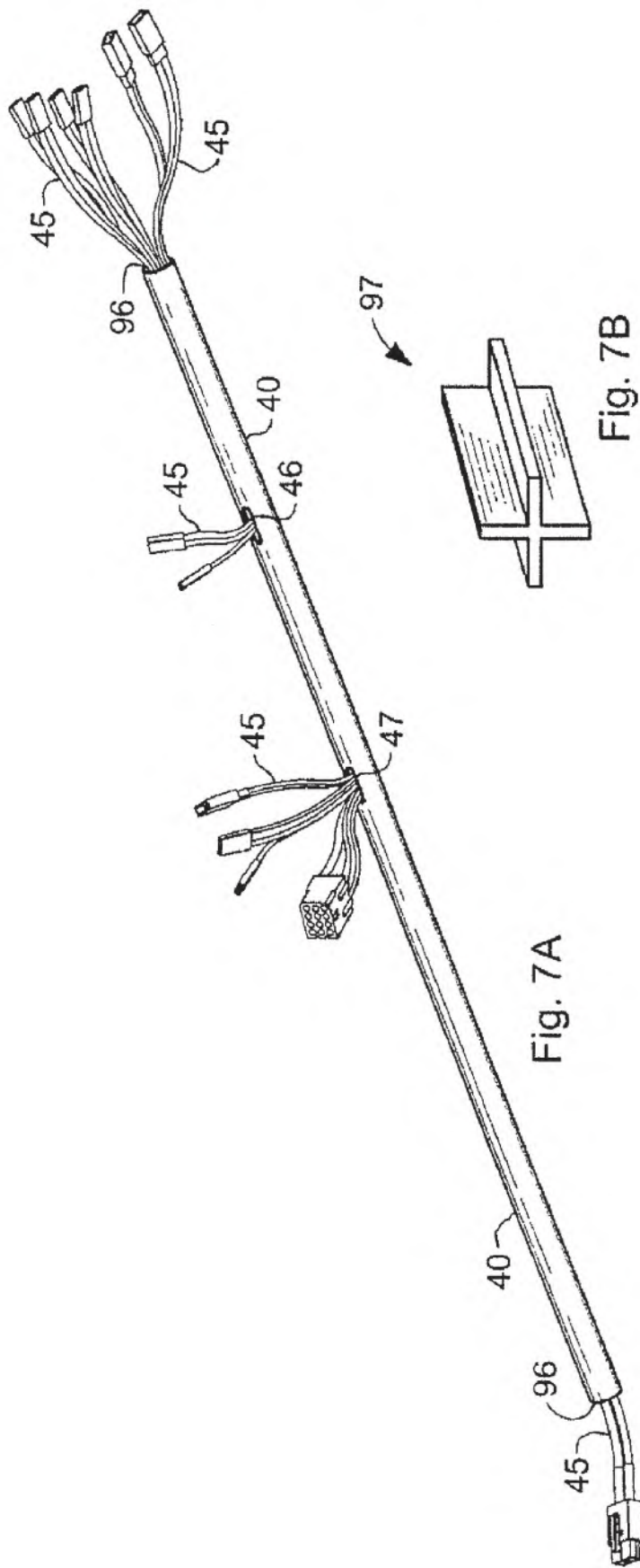


Fig. 6



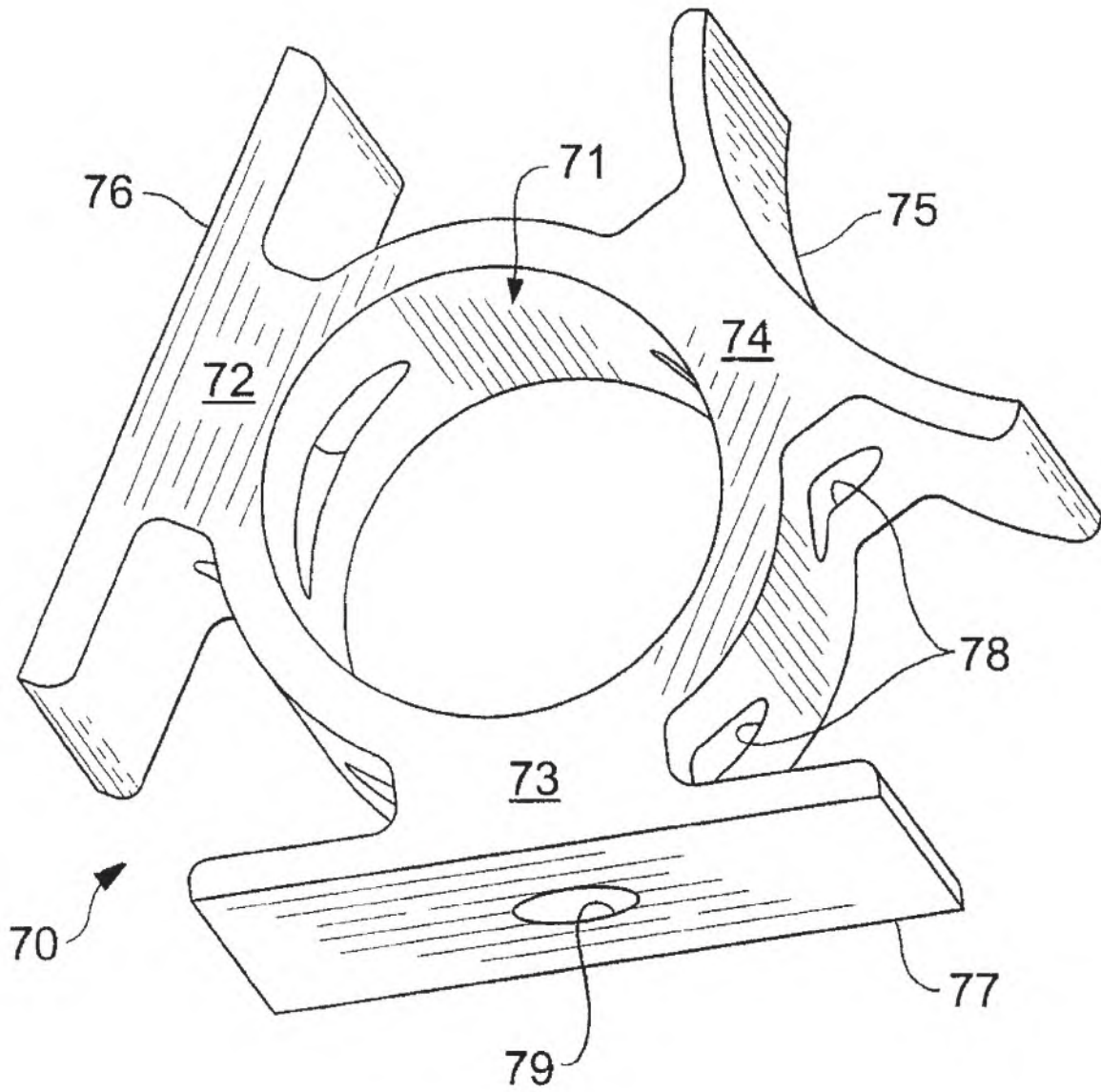


Fig. 8

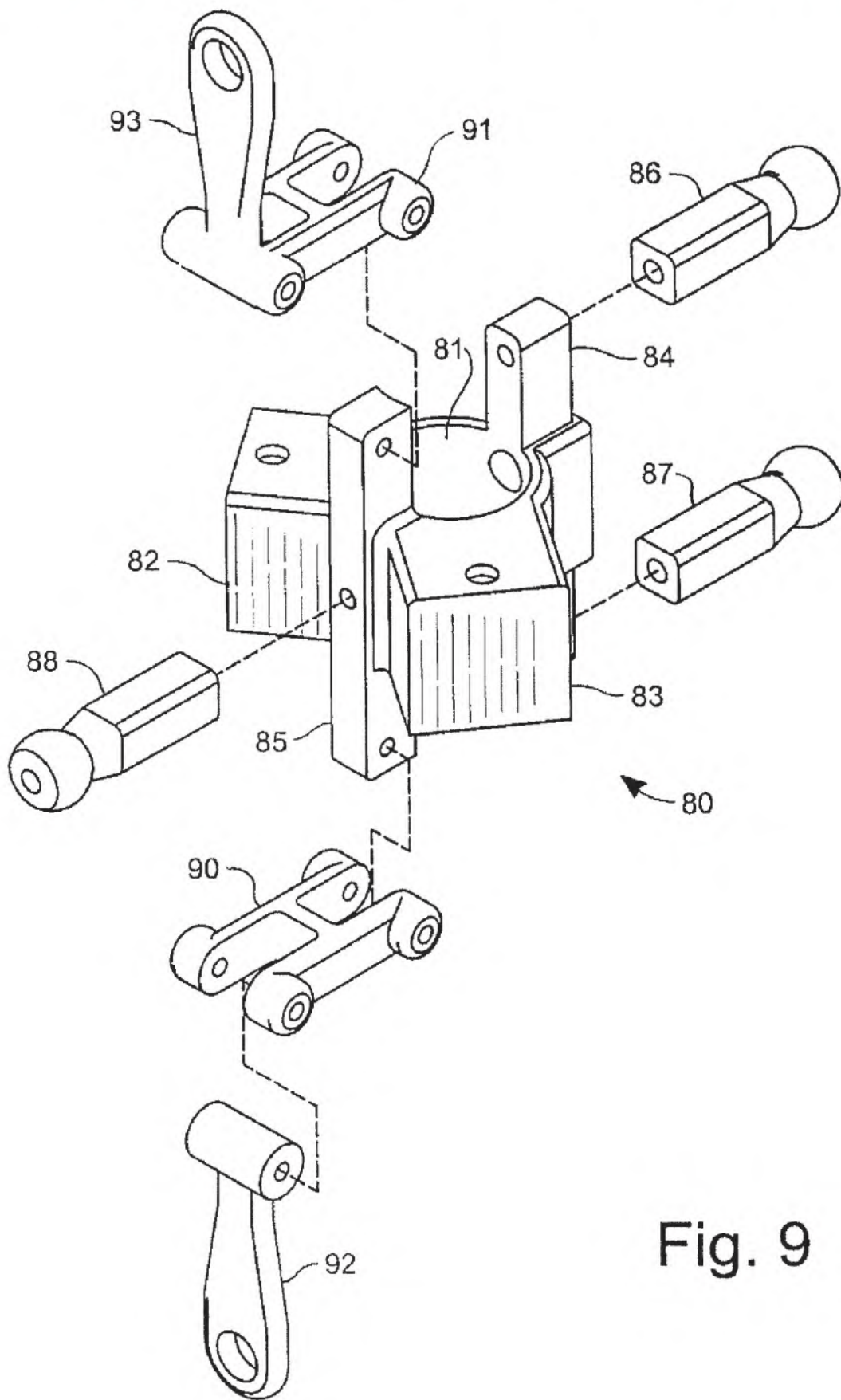


Fig. 9

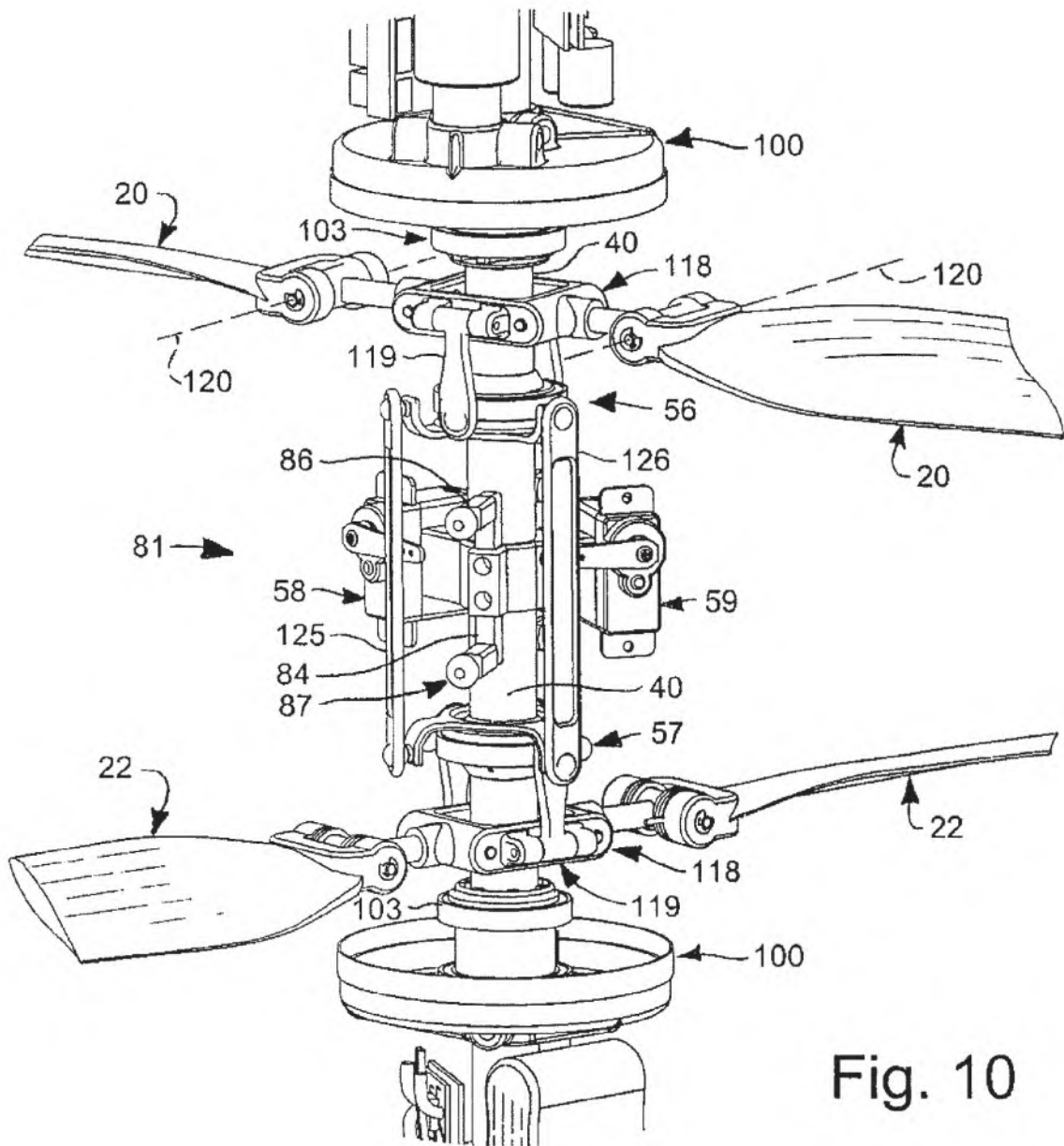


Fig. 10

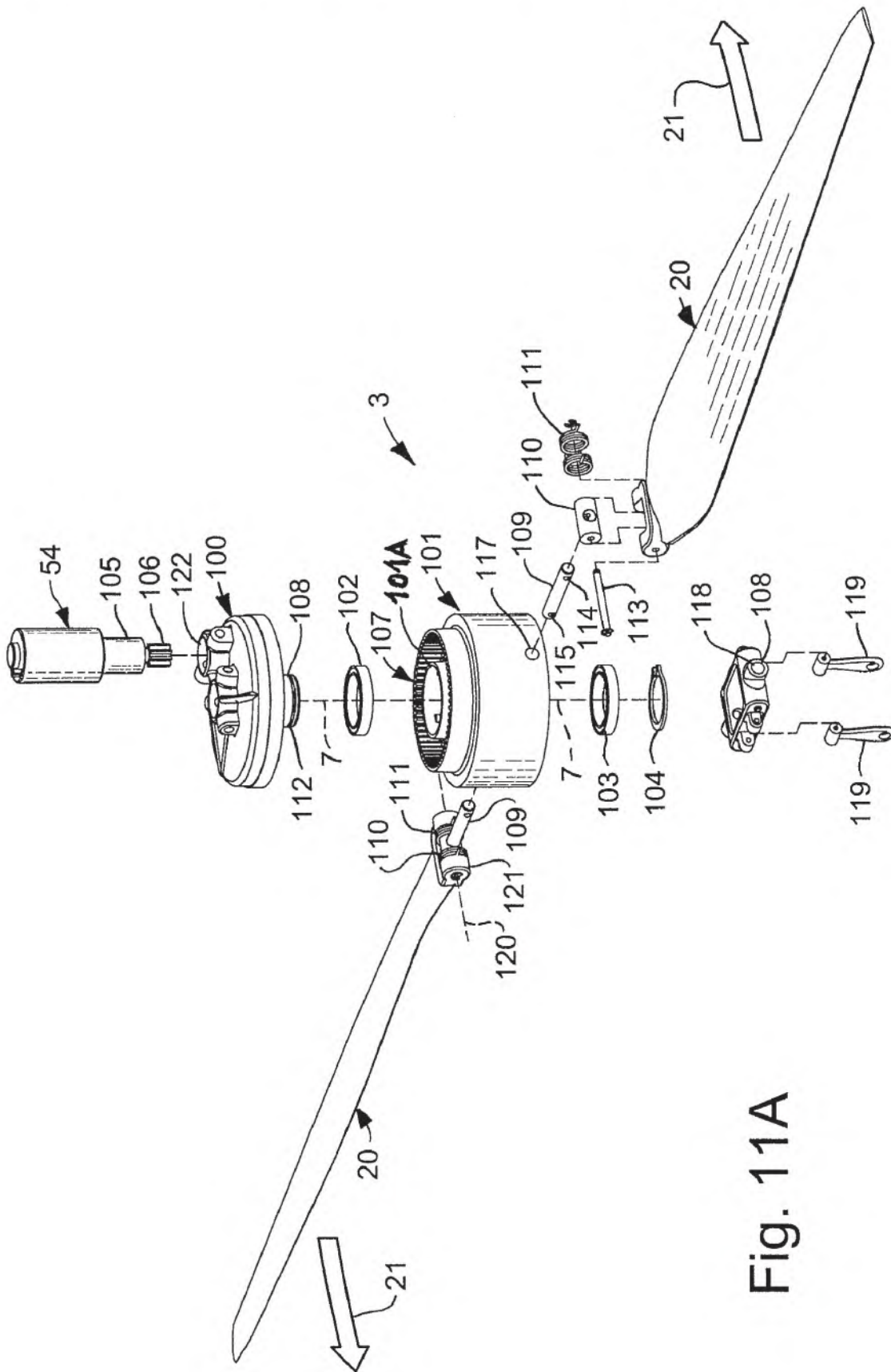


Fig. 11A

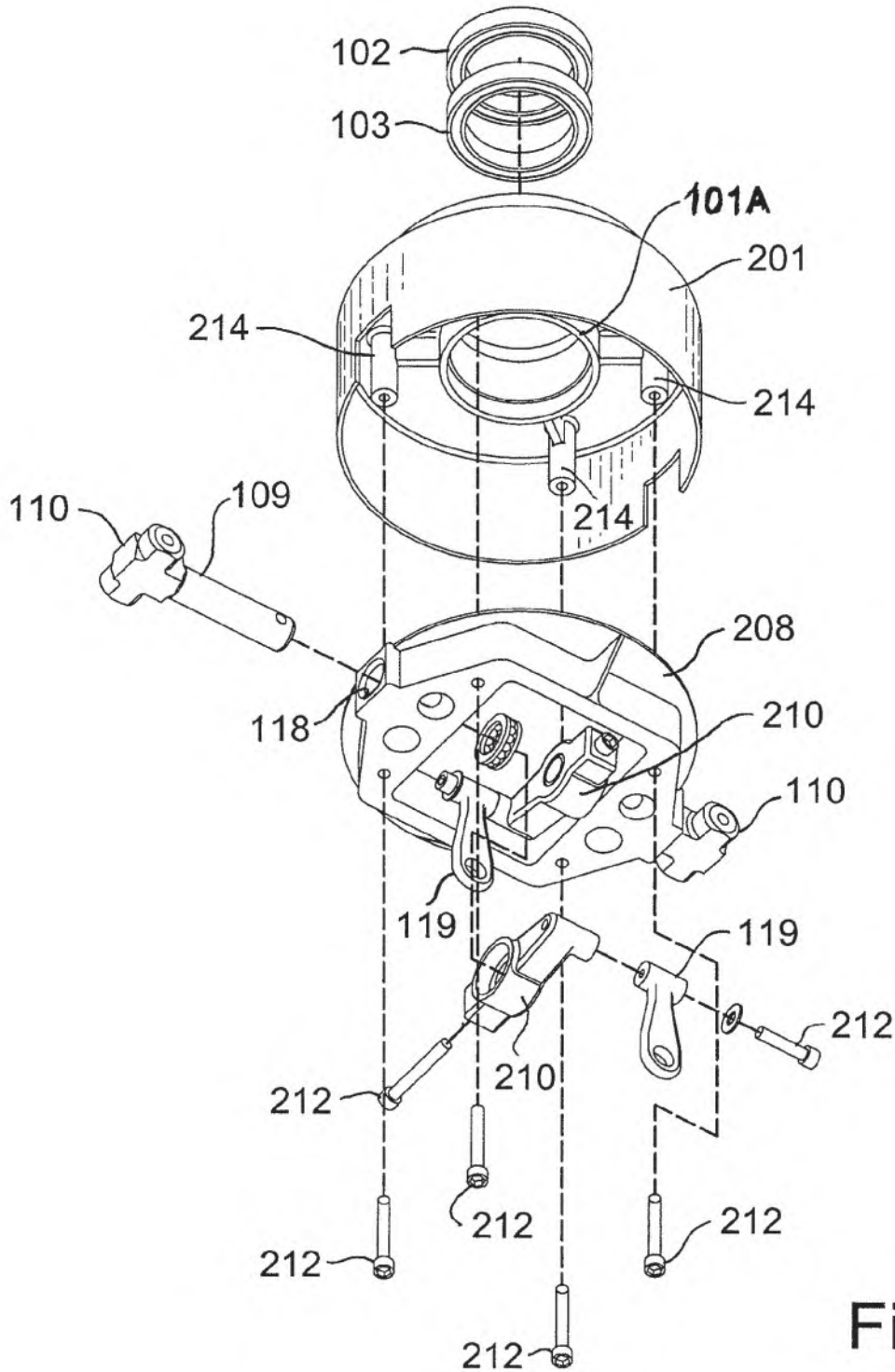


Fig. 11B

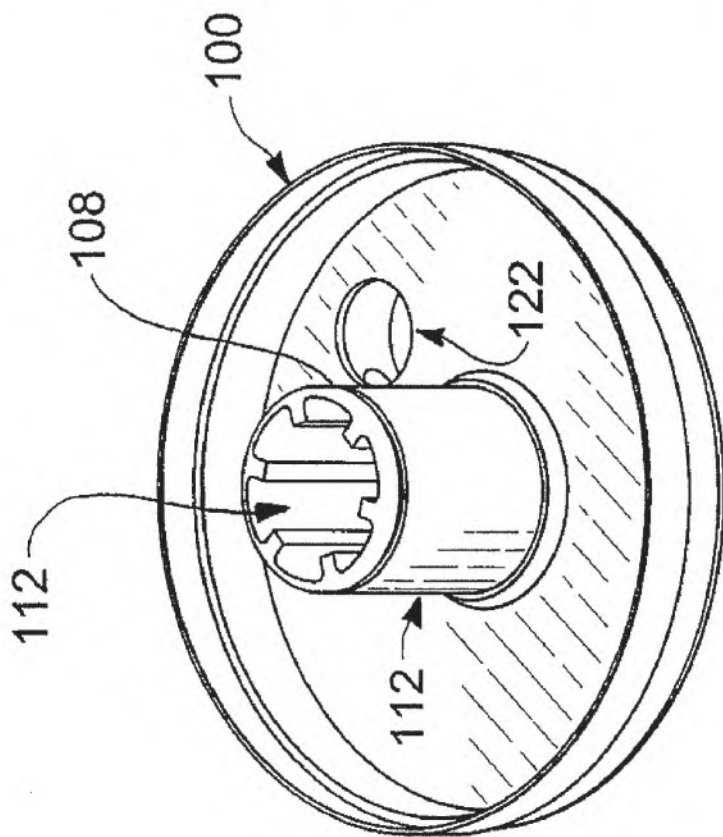


Fig. 12B

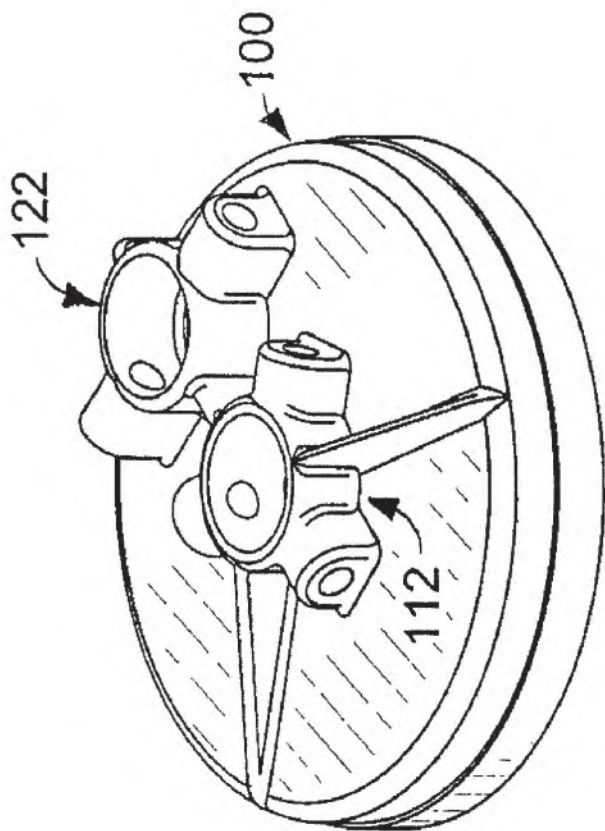


Fig. 12A

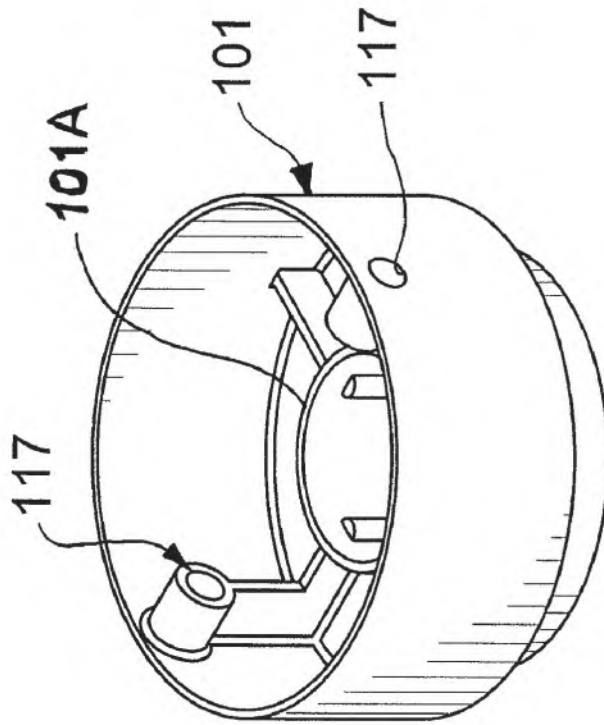


Fig. 13B

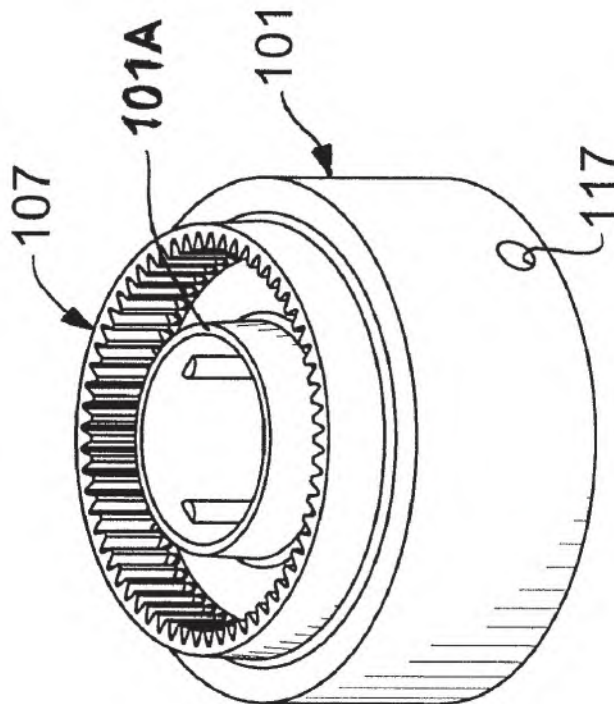


Fig. 13A

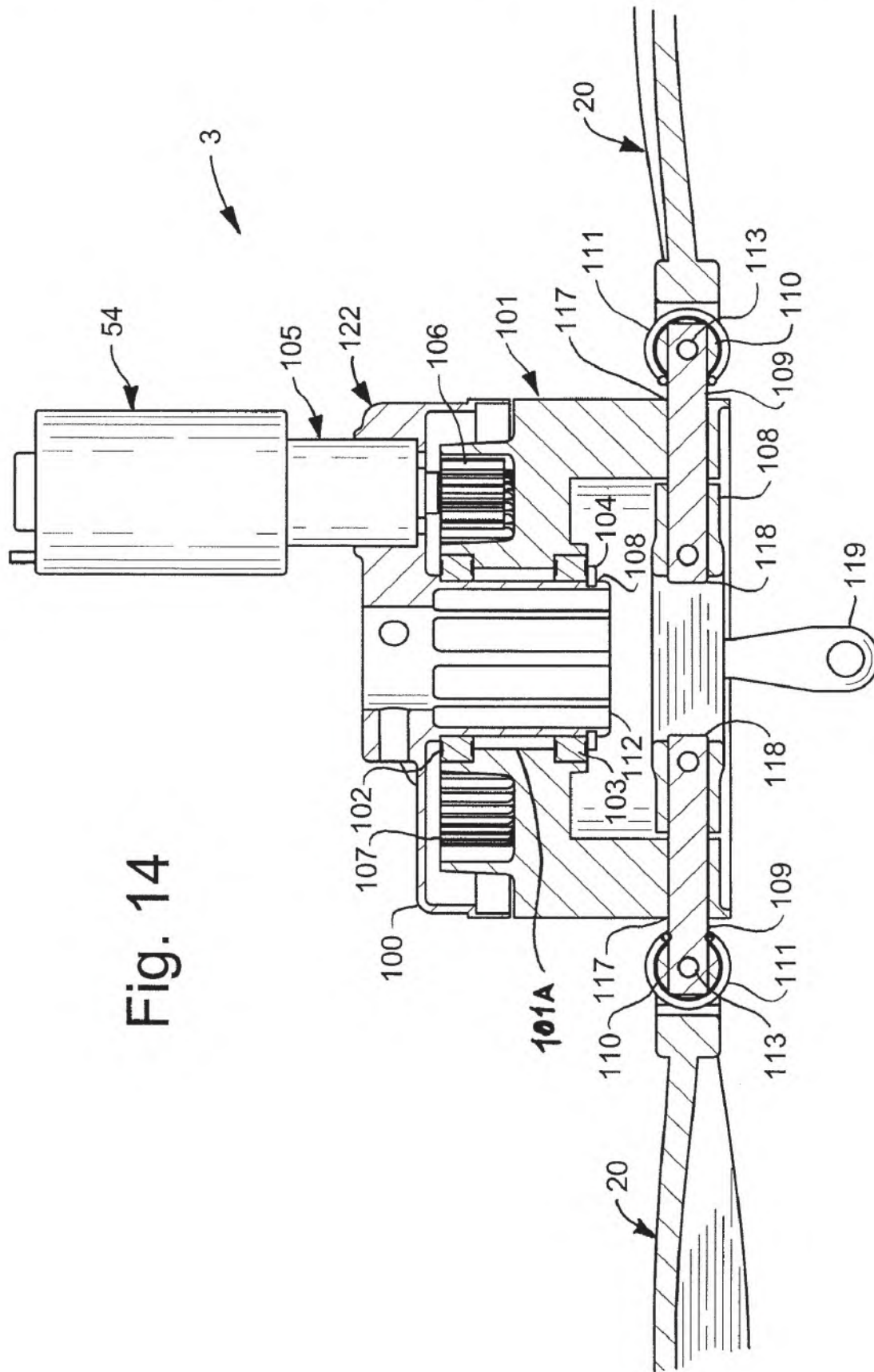


Fig. 14

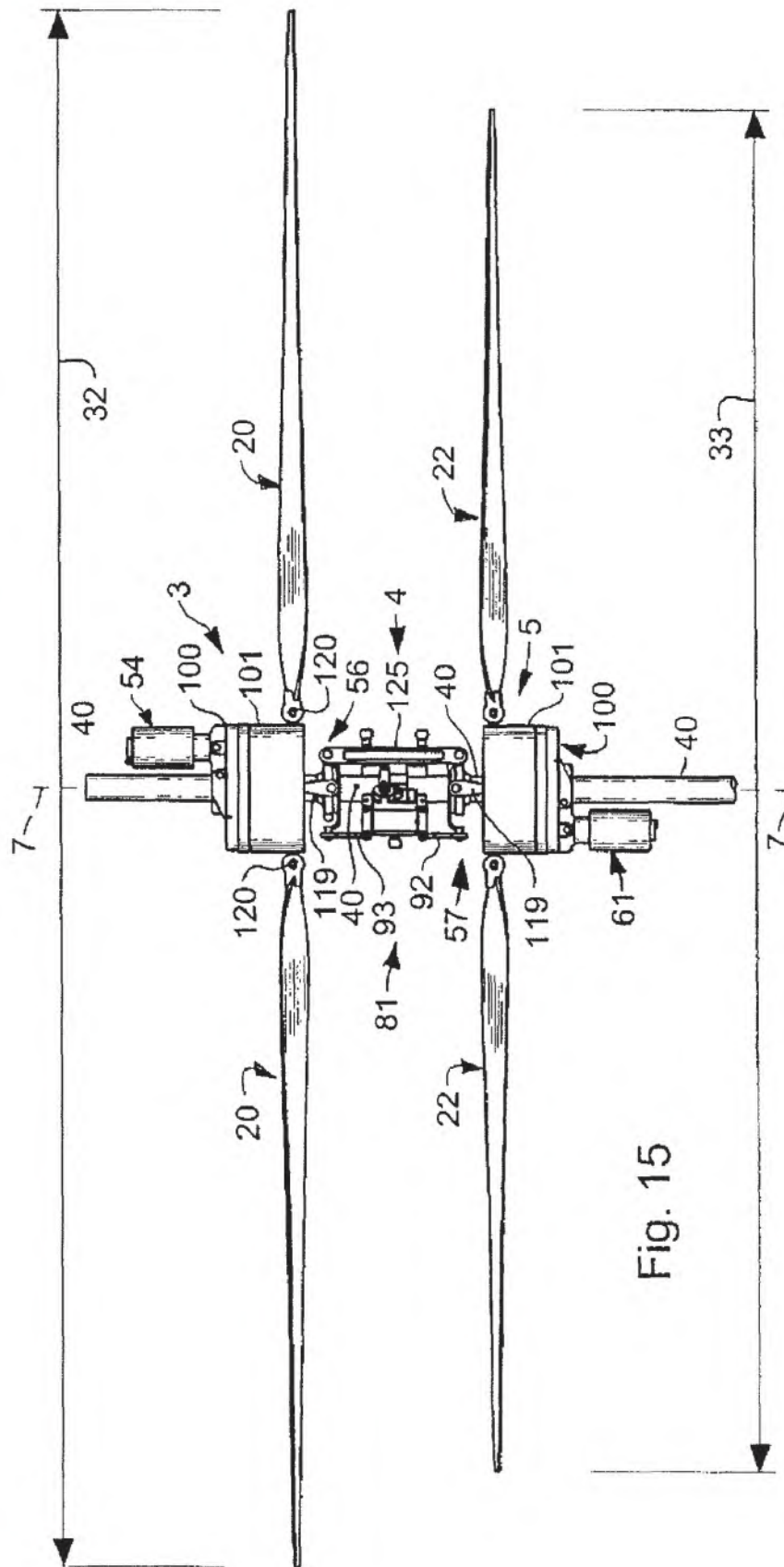


Fig. 15

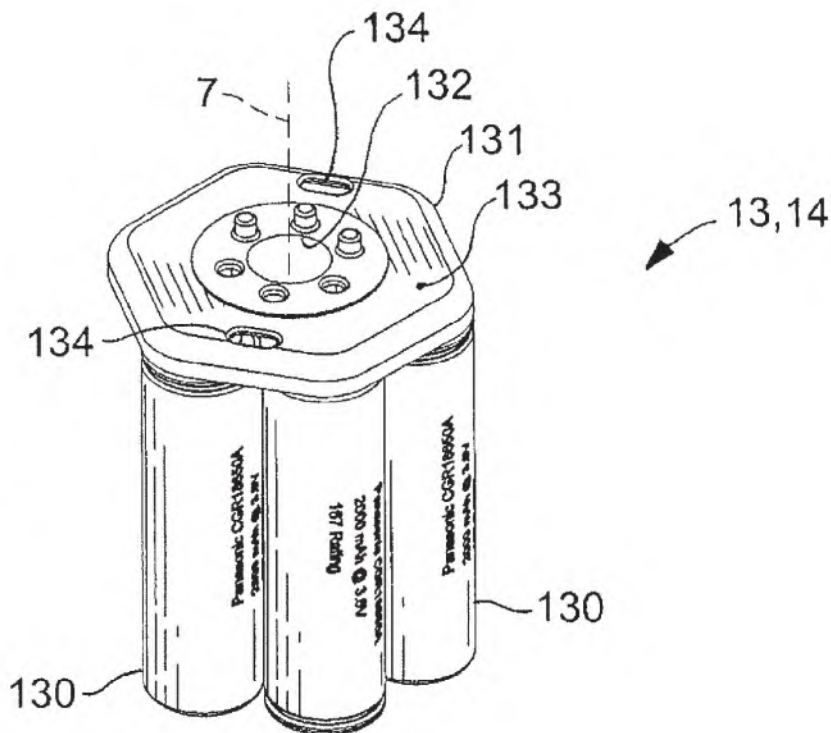


Fig. 16A

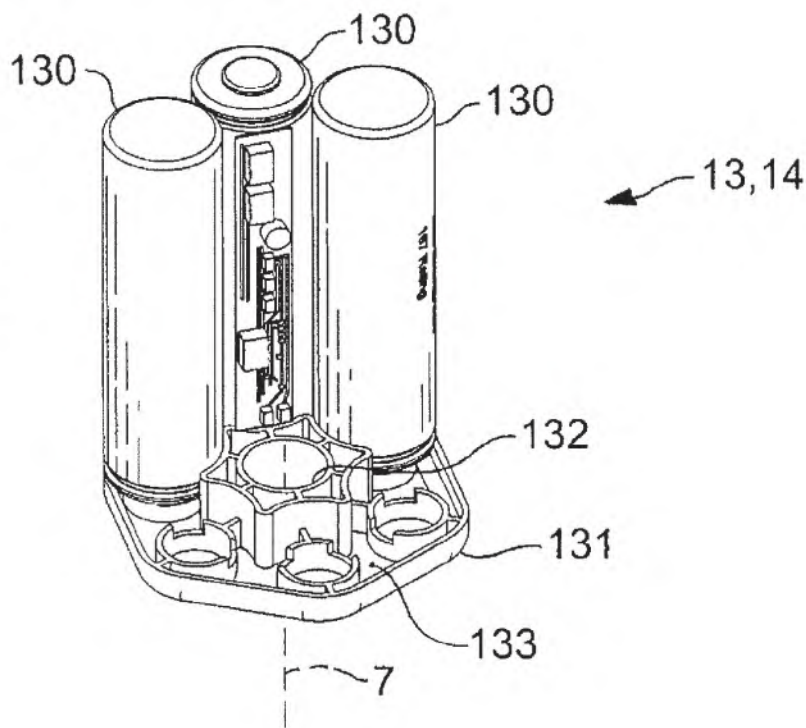


Fig. 16B

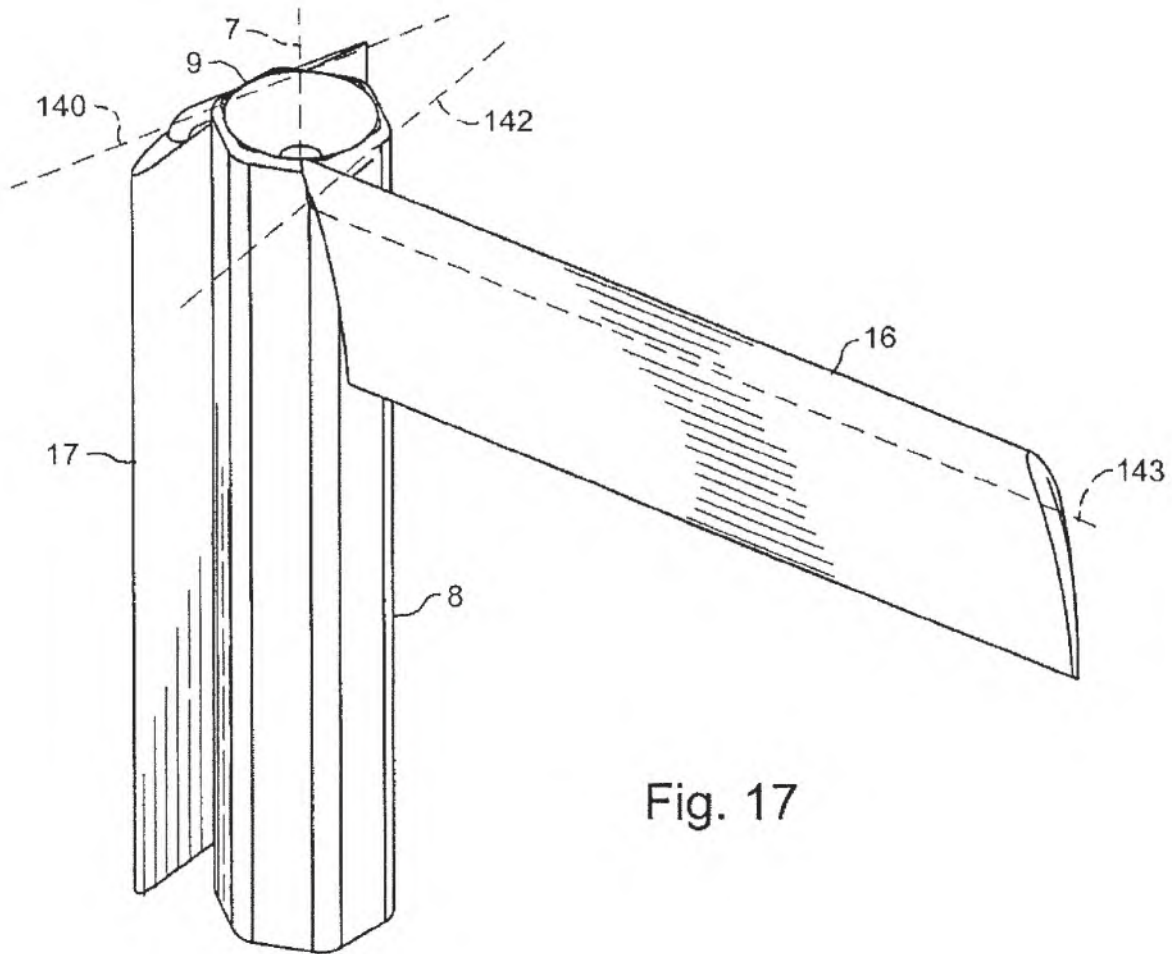


Fig. 17

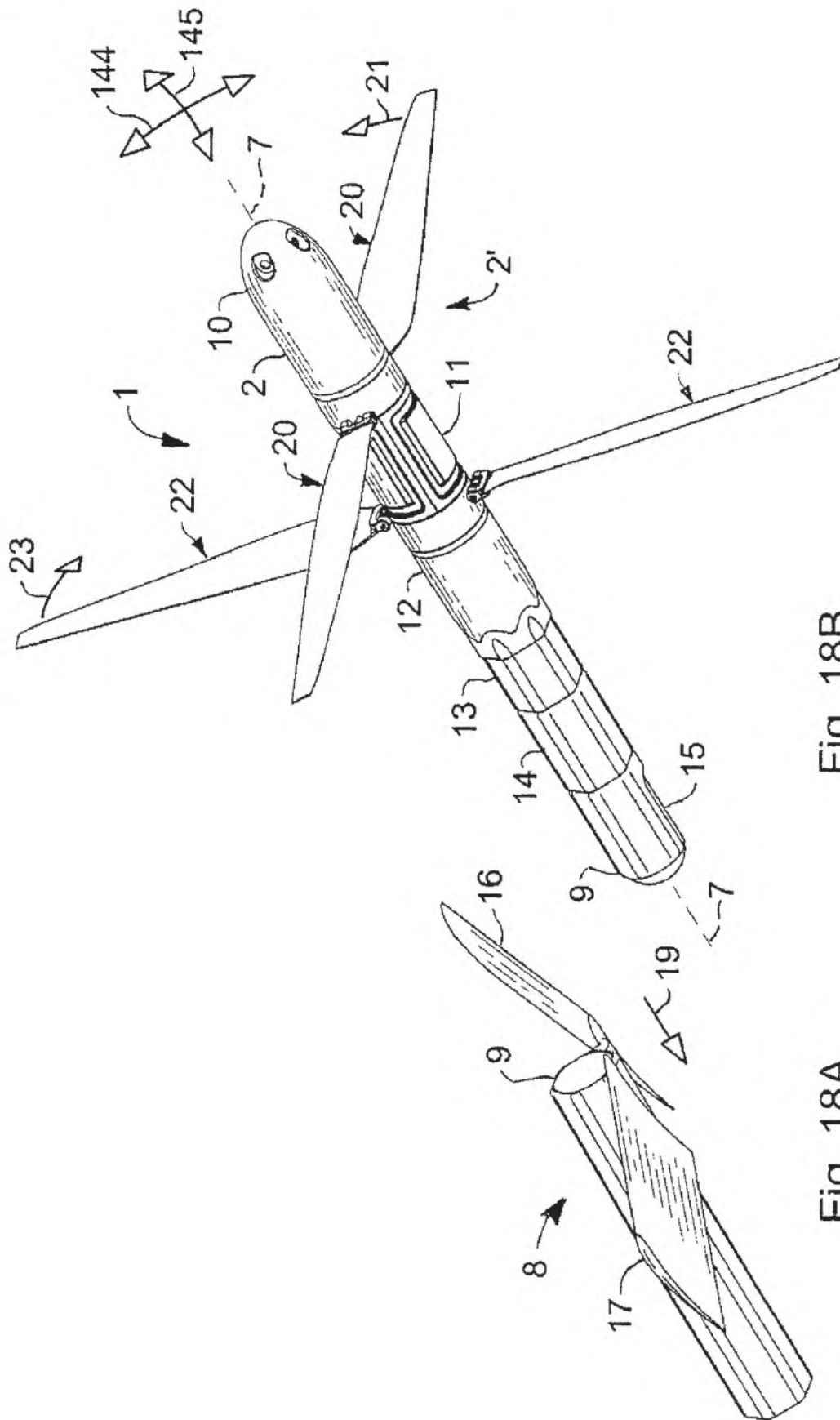


Fig. 18B

Fig. 18A

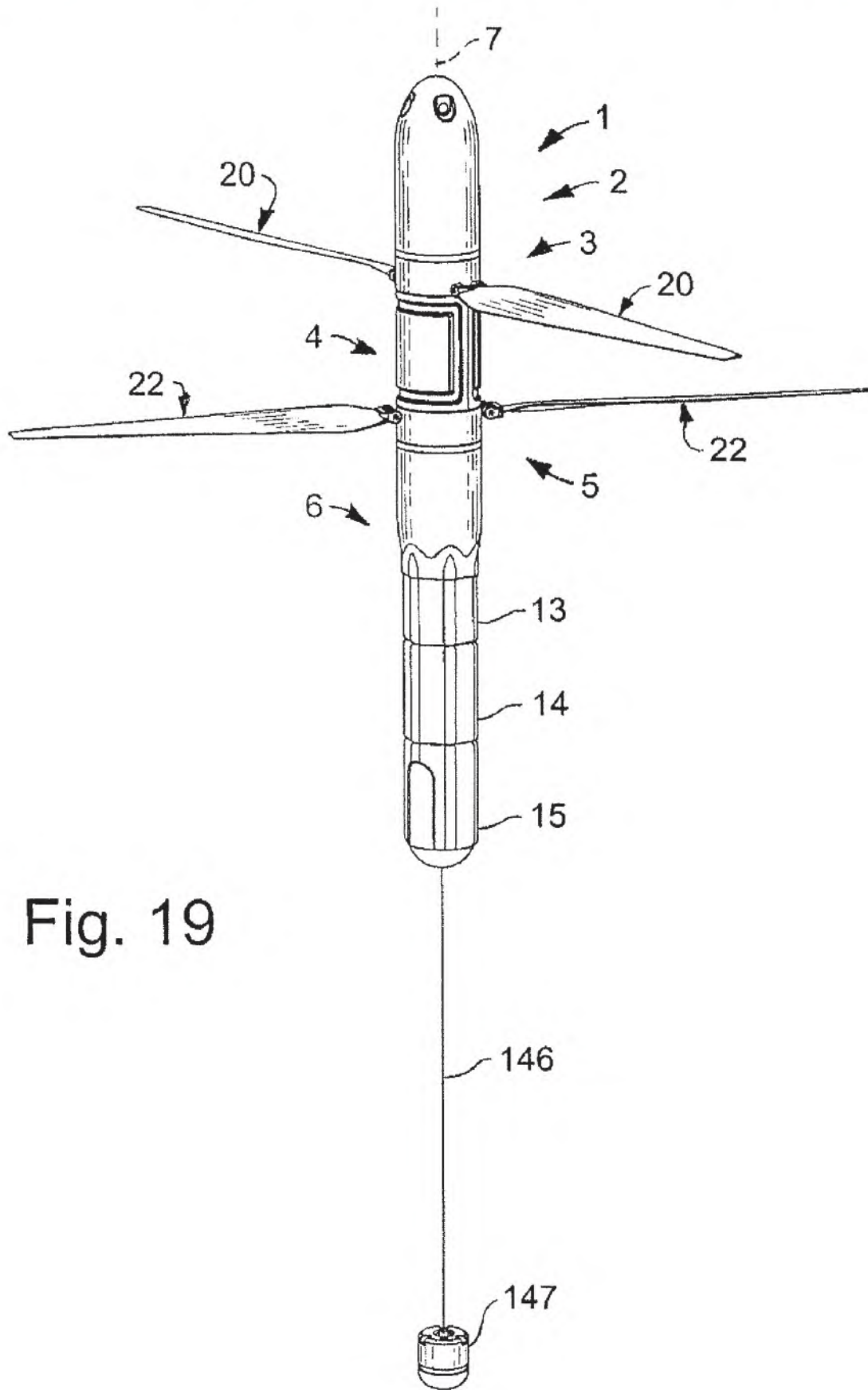
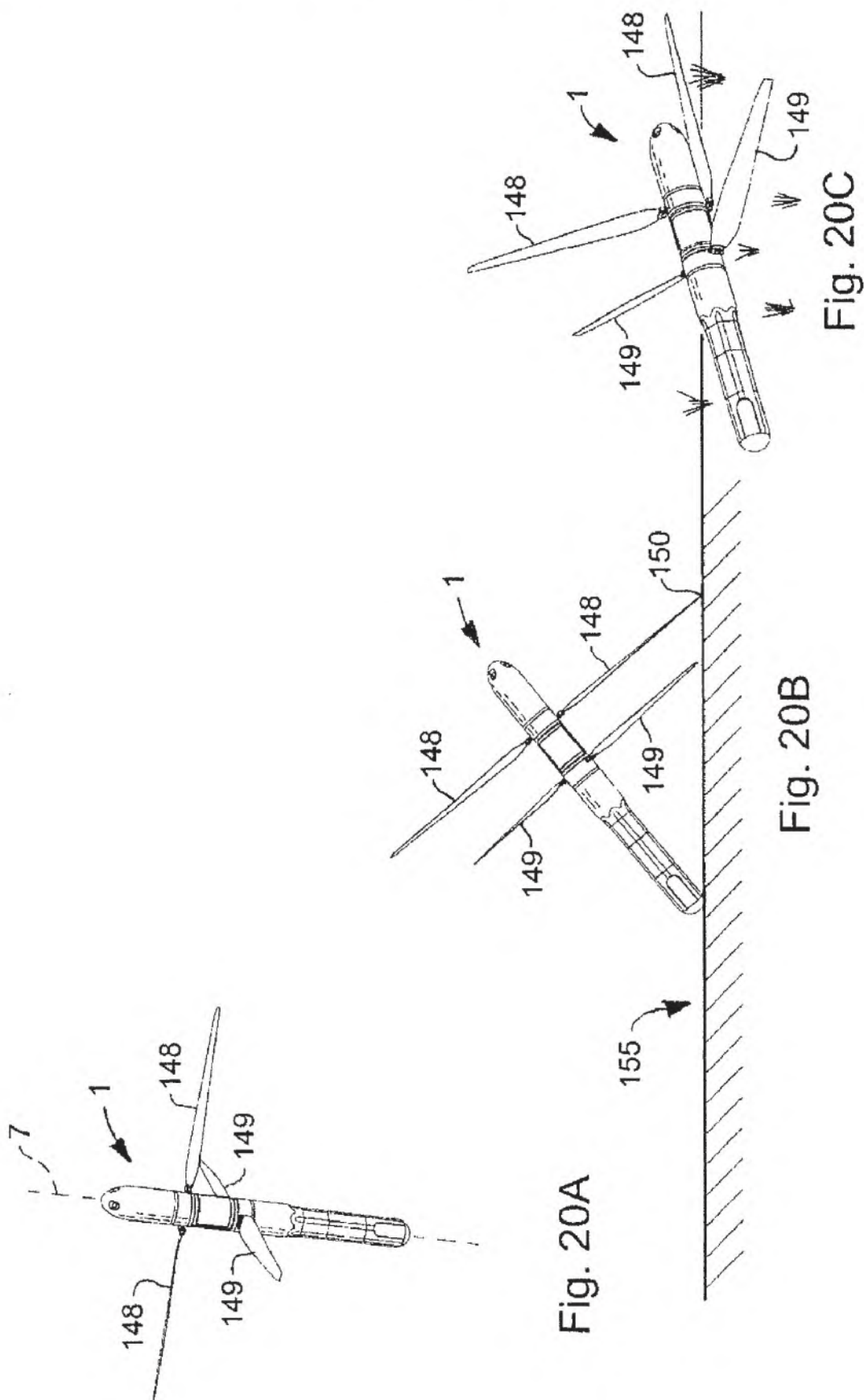


Fig. 19



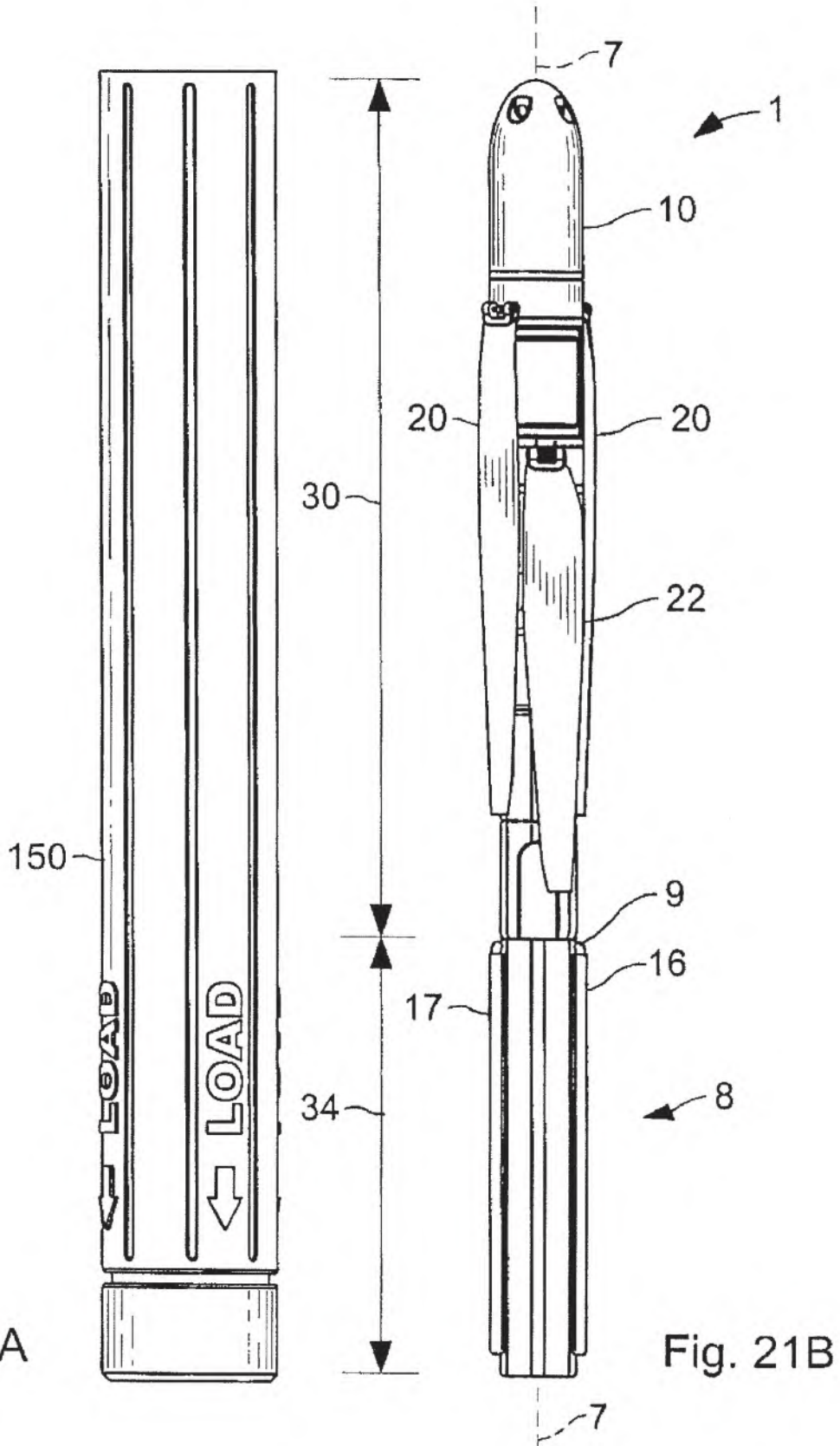


Fig. 21A

Fig. 21B

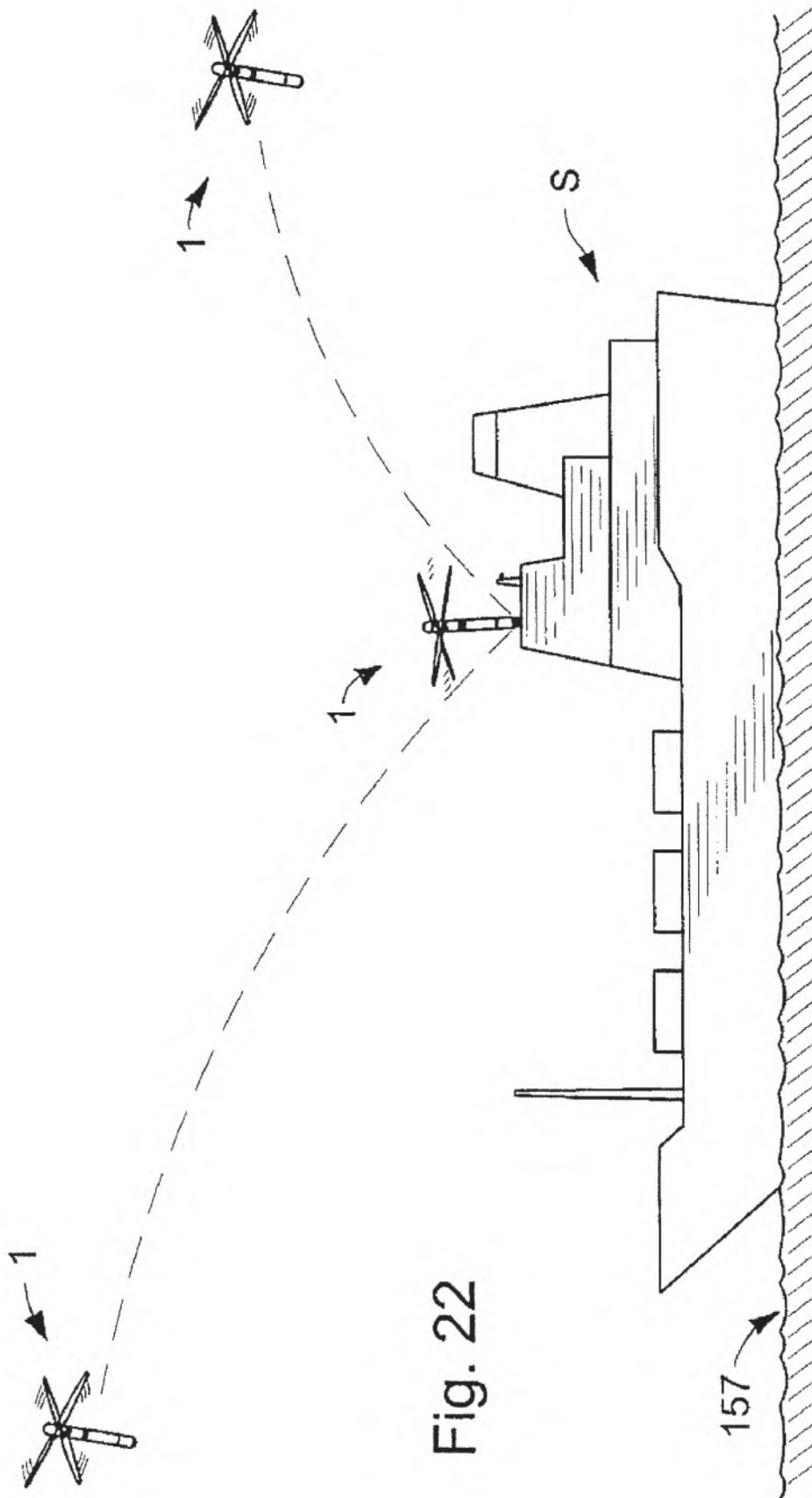


Fig. 22

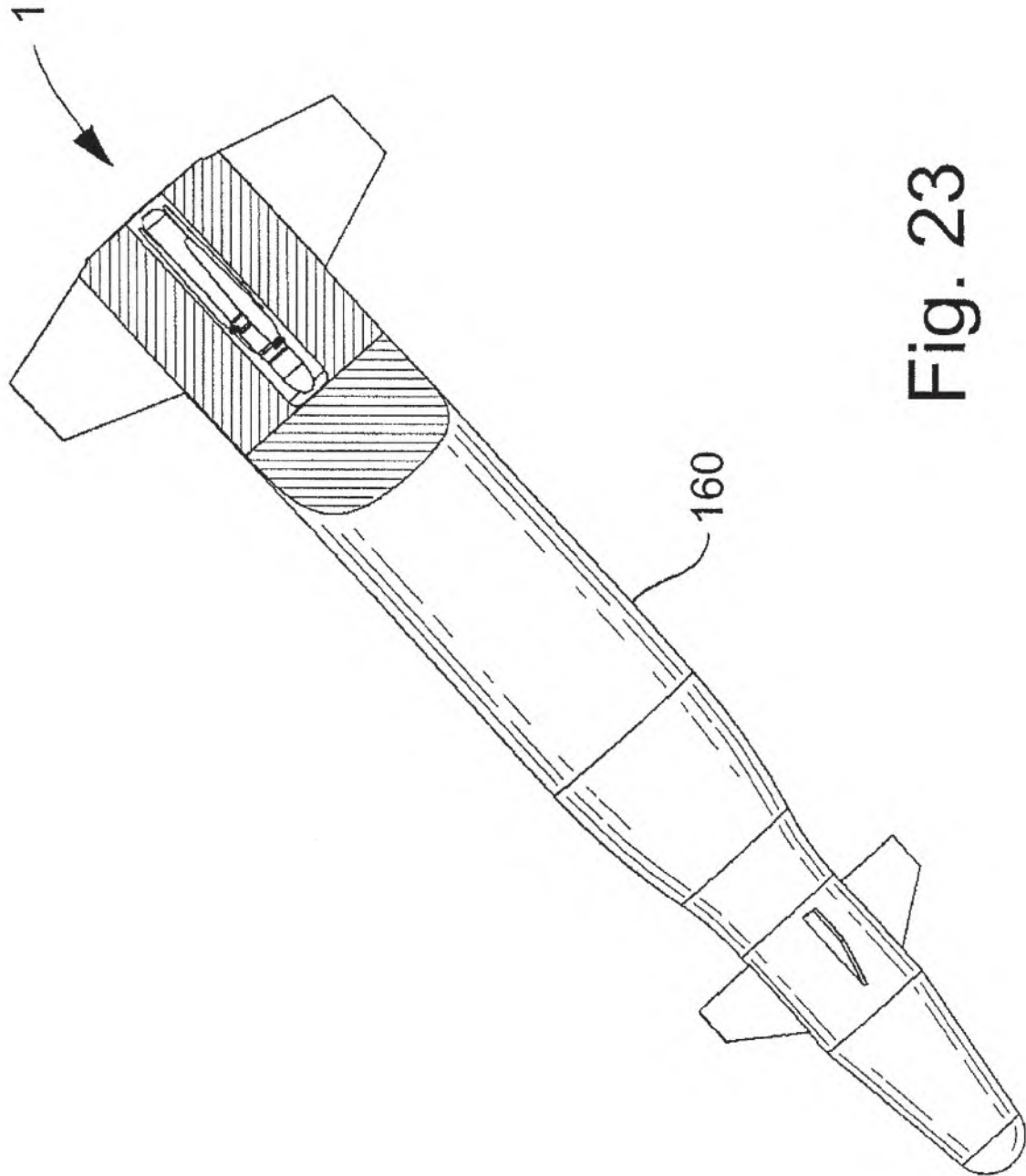


Fig. 23

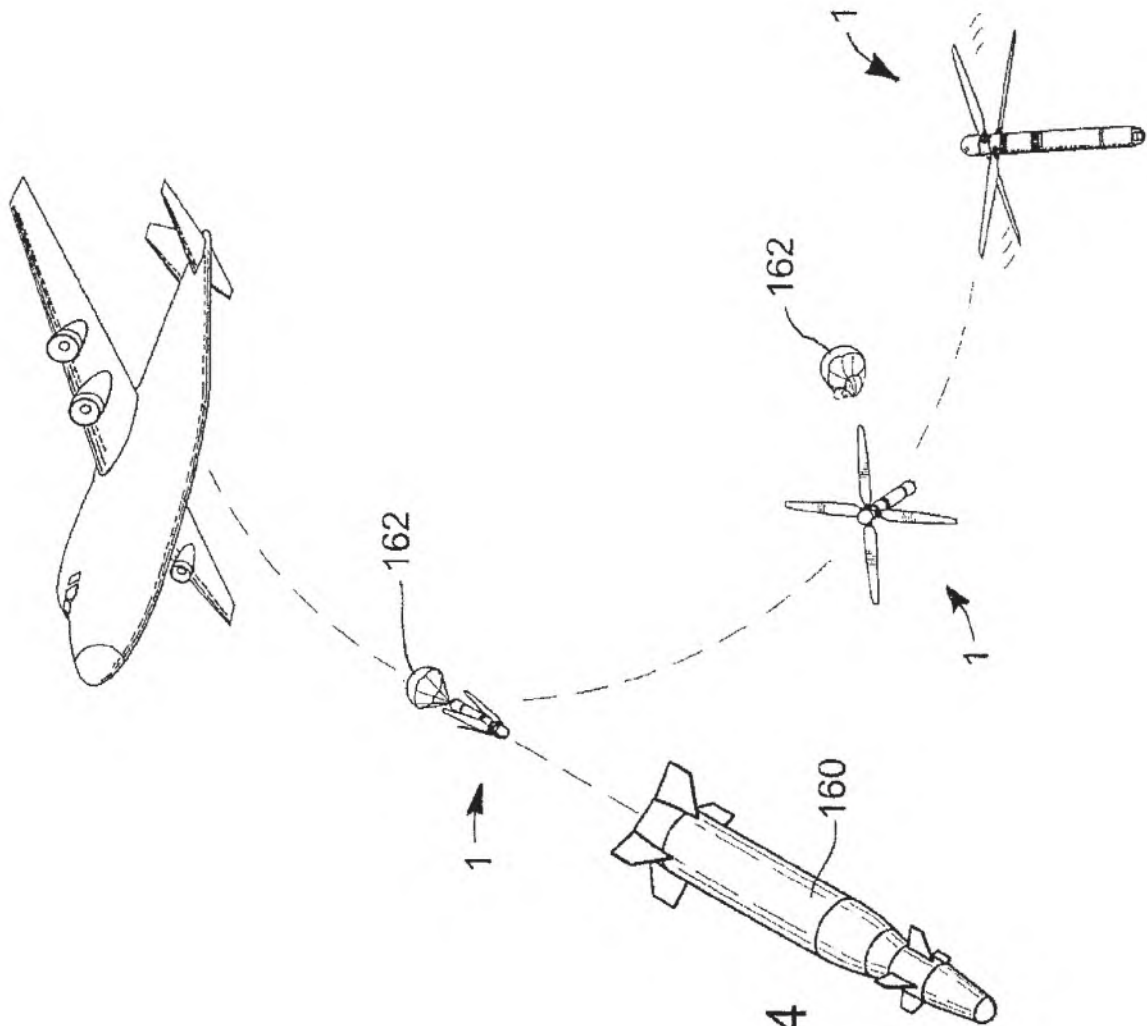
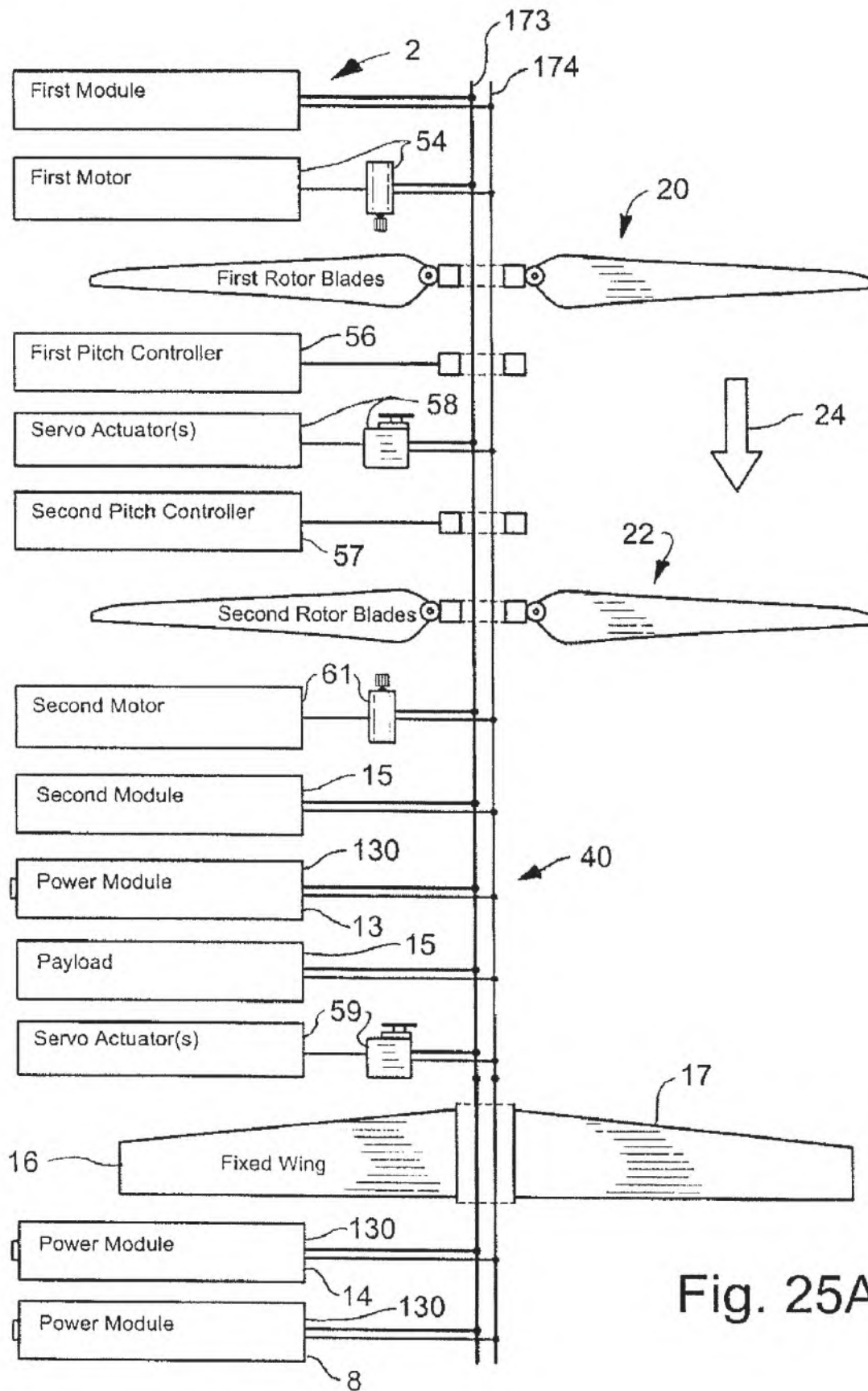


Fig. 24



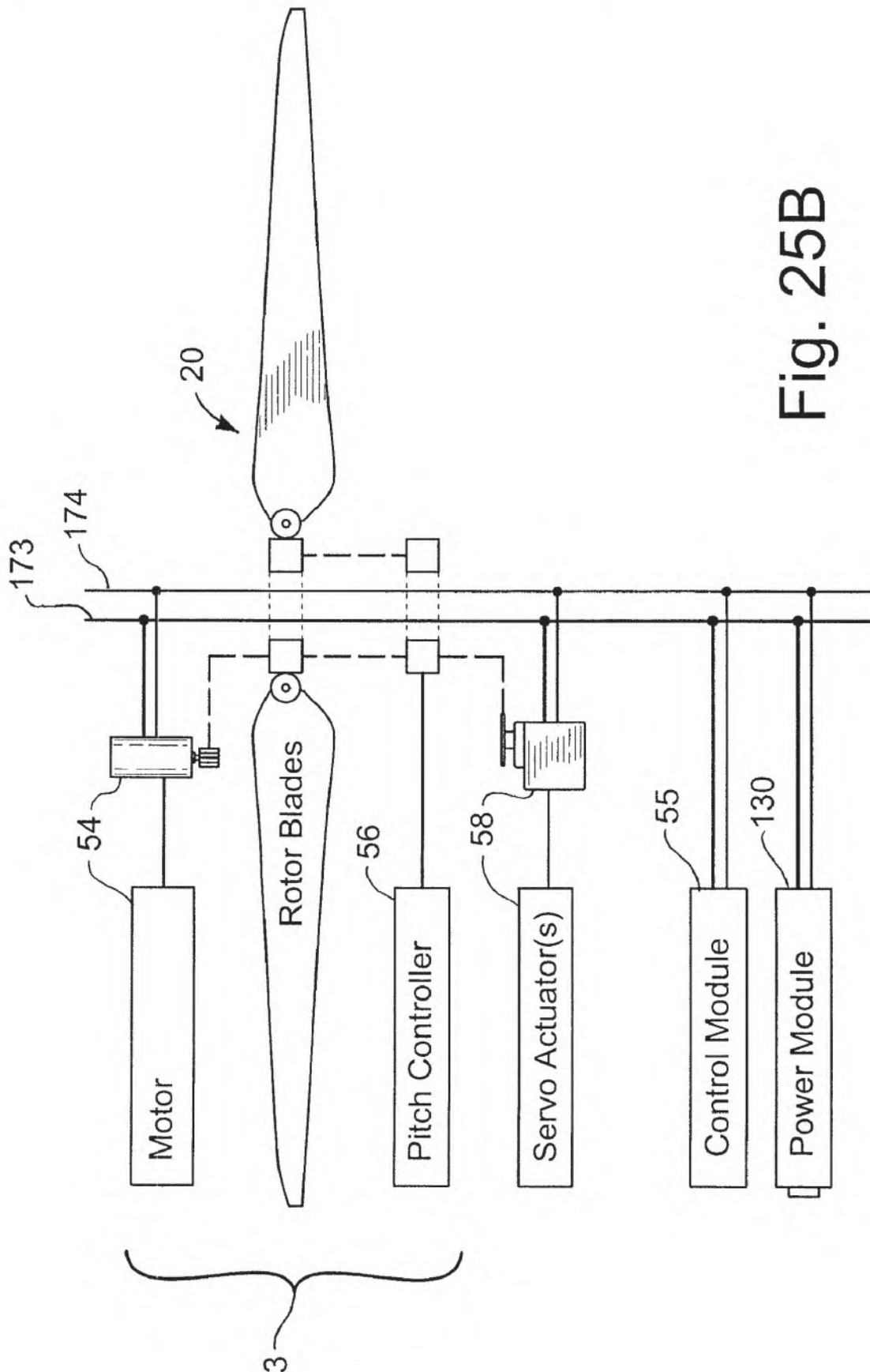


Fig. 25B

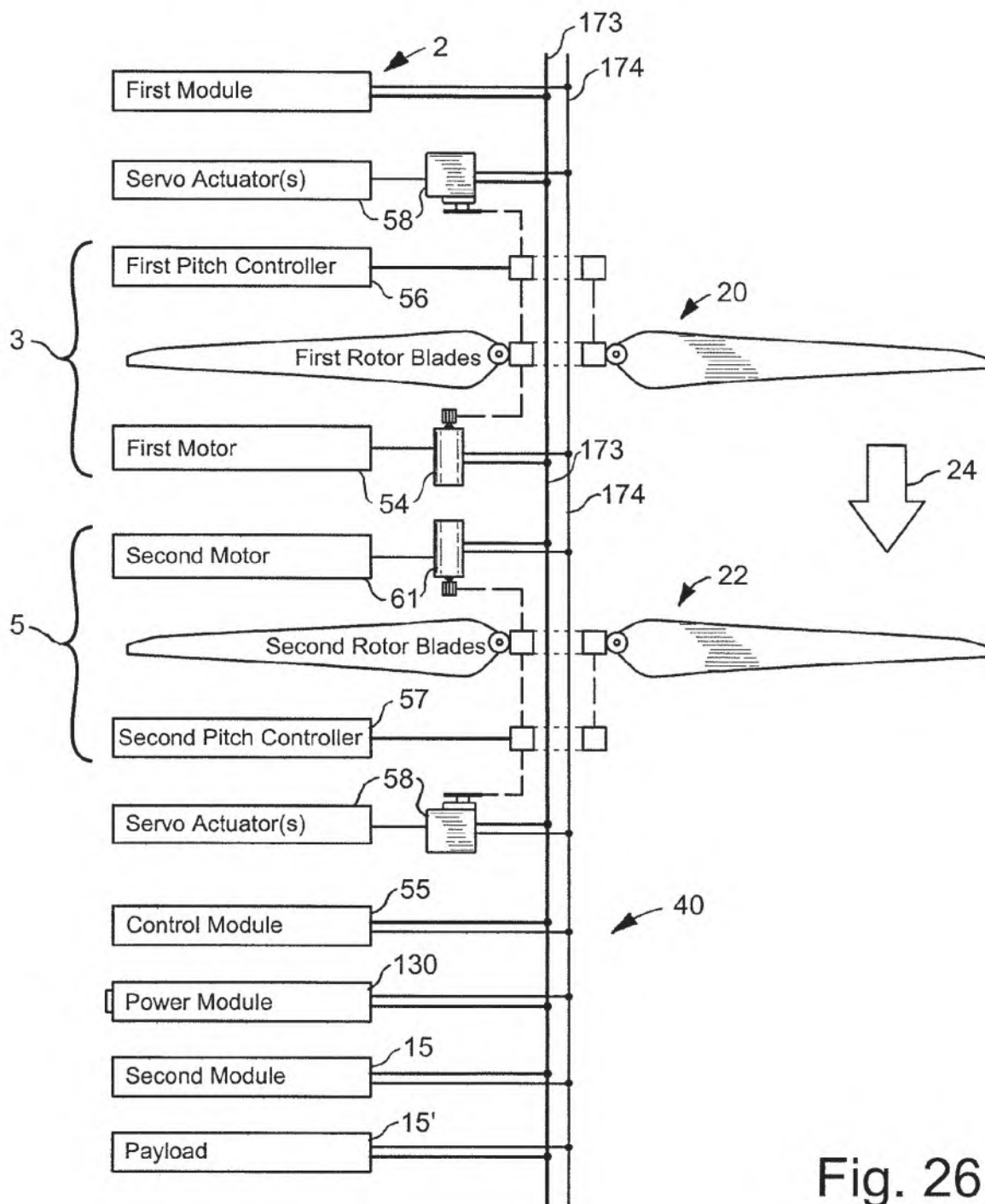


Fig. 26

US 8,042,763 B2

1

ROTARY WING VEHICLE

This application is a Divisional Application of Non-Provisional application Ser. No. 11/105,746 filed Apr. 14, 2005 which claims priority to and benefit of U.S. Provisional Application No. 60/562,081 which was filed Apr. 14, 2004 the disclosures of both Applications being incorporated by reference herein.

BACKGROUND

The present disclosure relates to aerial vehicles and particularly to unmanned aerial vehicles (UAV). More particularly, the present disclosure relates to unmanned rotary wing vehicles.

Rotary wing vehicles are used in a variety of applications. Unmanned rotary wing vehicles are often used by the military, law enforcement agencies, and commercial activities for aerial reconnaissance operations.

SUMMARY

A rotary wing vehicle, in accordance with the present disclosure includes a body structure having an elongated tubular backbone or core, and a counter-rotating coaxial rotor system having rotors with each rotor having a separate motor to drive the rotors about a common rotor axis of rotation. A power source comprising, for example, a battery, fuel cell, or hybrid gas-electric generator is provided to supply electric power to the motors. Power transmission to and between the rotor systems is accomplished primarily by means of electrical wiring instead of mechanical shafting. A modular structure is described which assists manufacturability.

One embodiment of the disclosure includes an auxiliary power-pack which is separable from the vehicle in flight to facilitate, for instance, delivery of the vehicle to a distant location. In another embodiment, the power-pack comprises a payload such as an explosive munition, dipping sonar, hydrophones, or a separable sonobouy module. While aspects of the disclosure are applicable to many helicopters, including full-sized man carrying helicopters, the current disclosure is especially well suited for application to small, autonomous, or radio-controlled rotary wing aircraft known as remotely piloted vehicles (RPVs), or unmanned aerial vehicles (UAVs).

Additional features of the present disclosure will become apparent to those skilled in the art upon consideration of the following detailed description of illustrative embodiments exemplifying the best mode of carrying out the disclosure as presently perceived.

BRIEF DESCRIPTION OF THE DRAWINGS

The detailed description particularly refers to the accompanying figures in which:

FIG. 1 is a diagrammatic view of a rotary wing vehicle in accordance with the present disclosure showing an aircraft including a guidance system, and a pair of rotor systems coupled to an airframe comprising a non-rotating structural spine or backbone and carrying a payload;

FIG. 2A is a perspective view of a rotary wing vehicle in accordance with the present disclosure showing a counter-rotating coaxial rotor system in a vertical flight mode;

FIG. 2B is a perspective view of the rotary wing vehicle of FIG. 2A having a counter-rotating coaxial rotor system and a fixed-wing booster module in a horizontal flight mode;

2

FIG. 3 is a side elevation view of the rotary wing vehicle of FIG. 2A showing exterior body panels, electrical wiring, and booster section removed for clarity;

FIG. 4 is a side elevation view, with portions broken away, of the vehicle of FIG. 2A showing a counter-rotating coaxial rotor system and an electrical power source;

FIG. 5 is an enlarged perspective view of the vehicle of FIG. 2A, with portions broken away, showing an upper interior section of the vehicle and the counter-rotating coaxial rotor system;

FIG. 6 is an enlarged perspective view of the vehicle of FIG. 2A, with portions broken away, showing a lower interior section of the vehicle and the counter-rotating coaxial rotor system;

FIG. 7A is a perspective view of a core tube or backbone having a circular cross section and a hollow interior channel that is used as a conduit between sections of the vehicle and showing electrical wiring running through the hollow interior and entering and exiting at various points;

FIG. 7B is a perspective view of backbone having a generally cruciform cross section with exterior channels running the length of the backbone that can be used as conduits between sections of the vehicle.

FIG. 8 is an enlarged perspective view of a first ring mount;

FIG. 9 is an exploded perspective view of a second ring mount showing attached linkages and body supports;

FIG. 10 is an enlarged perspective view of a middle interior section of the vehicle of FIG. 2A, with portions broken away, showing the counter-rotating coaxial rotor system;

FIG. 11A is an exploded perspective view of a rotor module having rotor blades with variable cyclic pitch and fixed collective pitch;

FIG. 11B is an exploded perspective view of a rotor module having rotor blades with variable cyclic and variable collective pitch;

FIGS. 12A and 12B are perspective views of a first side and a second side of a motor mount;

FIGS. 13A and 13B are perspective views of a first side and a second side of a rotor hub;

FIG. 14 is a sectional view taken along lines 14-14 of FIG. 2B, showing the rotor module;

FIG. 15 is a side elevation view of the counter-rotating coaxial rotor system of FIG. 2A, and a core tube depending from the rotor system;

FIGS. 16A and 16B are exploded perspective views of a single power module including several batteries;

FIG. 17 is an orthographic view of the booster module of FIG. 2B showing one wing folded for storage and one wing extended in a flight configuration;

FIG. 18 is an orthographic view depicting the booster module separating in flight from the rotary wing vehicle;

FIG. 19 is an elevation view of the rotary wing vehicle showing a dipping sonar or hydrophone assembly depending from a bottom portion of the vehicle;

FIGS. 20A, 20B, and 20C are sequential views of the rotary wing vehicle showing the operation of unequal length folding blades during a crash landing of the vehicle on ground underlying the rotary wing vehicle;

FIGS. 21A and 21B are side elevation views of a storage tube and the rotary wing vehicle showing the vehicle folded for storage;

FIG. 22 is a perspective view of a rotary wing vehicle in accordance with present disclosure delivering a sensor or marking to a remote location shown for the purpose of illustration to be a ship on the open ocean;

US 8,042,763 B2

3

FIG. 23 is a side elevation view of a rotary wing vehicle folded for storage in a rear portion of a gravity-delivered bomb; and

FIG. 24 is a perspective view of a rotary wing vehicle deploying from the rear of a gravity-delivered bomb to the vicinity of a target site showing the gravity-delivered bomb ejecting the rotary wing vehicle and the rotary wing vehicle deploying into a vertical flight mode to loiter in the target area to provide an attacking force with real-time battle damage assessment after the gravity delivered bomb has struck the target.

FIG. 25A is a diagrammatic view of another rotary wing vehicle showing an aircraft having a central buss architecture with power and signal conduits, a guidance system, and a pair of rotor systems coupled to an airframe comprising a non-rotating structural spine or backbone and carrying a payload; and

FIG. 25 B is a diagrammatic view of the rotary wing vehicle of FIG. 25A showing a rotor system, control system, and power supply communicating through a central data/power buss with power and signal conduit.

FIG. 26 is a diagrammatic view of another embodiment of a rotary wing vehicle, according to the present disclosure, having a central buss architecture with power and signal conduits, a guidance system, and a pair of rotor systems coupled to an air frame.

DETAILED DESCRIPTION

As suggested diagrammatically in FIG. 1, a rotary wing vehicle 1 includes, in series, a first module 2, a first and a second rotor system 3 and 5, power modules 13 and 14, and a second module 15 coupled in spaced-apart relation to an airframe 40 extending along a common axis 7. Illustratively, airframe 40 is an elongated central backbone and can be arranged as a hollow core or having a cruciform cross-section. In operation, first rotor 3 and second rotor 5 rotate in opposite directions about common axis 7 to direct thrust in direction 24 and create lift in direction 24' to cause controlled flight of rotary wing vehicle 1, as suggested in FIG. 2A. First module 2 is adapted to include a variety of guidance systems 50', electronics 55, or payloads 15'. Second module 15 is adapted to include payload 15', or in some embodiments, a variety of guidance systems 50' and electronics systems 55'. Payload 15' may include, but is not limited to, munitions, radiation sensors, chemical detection sensors, biological agent sensors, active and passive listening devices, video sensors, supplemental power sources, or other mission-specific equipment. Rotary wing vehicle 1 thus provides means for moving reconnaissance, observation, or survey monitoring equipment to an area of interest to obtain information therefrom.

As suggested in FIGS. 1, 25A and 25B, first rotor system 3 includes a first motor 54, first rotor blades 20, and a first pitch controller 56. In illustrative embodiments, motor 54 is an electric motor as shown, for example, in FIGS. 4-6, or other suitable means for providing power to rotate rotor blades 20 about common axis 7. First rotor system 3 and second rotor system 5 are similar to one another in structure and function. Second rotor system 5 includes a second motor 61, second rotor blades 22, and a second pitch controller 57. In illustrative embodiments, motor 61 is an electric motor as shown, for example, in FIGS. 4-6, or other suitable means for providing power to rotate rotor blades 22 about common axis 7. Illustratively, electrical and electronic components are connected and communicate through electrical conduit 173 and electronic conduit 174 which hold power and signal lines, respectively. Although rotary wing vehicle 1 is illustrated having

4

two rotor systems, rotary wing vehicle 1 may have more than two rotor systems as performance and mission demands dictate.

As shown in FIGS. 1 and 3, airframe 40 is non-rotating and forms a central elongated hollow backbone to receive first module 2, first and second rotor systems 3, 5, power modules 13 and 14, and second module 15. Illustratively, power modules 13 and 14 are positioned to lie in side-by-side relation to one another between second rotor system 5 and second module 15. Because airframe 40 is hollow power modules 13, 14 can be connected electrically through the hollow backbone to motors 54 and 61.

Illustratively, pitch controller 56 is a swashplate 56' coupled to a fore/aft servo 58 and a roll servo 59 to vary the cyclic pitch of rotor blades 20 in response to input from a controller 55. In some embodiments, swashplate 56' is further coupled to a collective servo 98 to collectively change the pitch of rotor blades 20. Likewise, pitch controller 57 is a swashplate 57' coupled to a fore/aft servo 58 and a roll servo 59 to vary the cyclic pitch of rotor blades 20 in response to input from a controller 55. In some embodiments, swashplate 57' is also coupled to a collective servo 98 to collectively vary the pitch of rotor blades 20. In illustrative embodiments, controller 55 is a command signal controller as shown, for example, in FIG. 3, or other suitable means for providing a desired electrical or mechanical directional signal to servos 58, 59, or 98, and motors 54, 61.

Illustratively, rotary wing vehicle 1 has a fixed-pitch rotor system having two servos 58, 59 for aircraft pitch (helicopter-style fore/aft cyclic input) or aircraft roll (helicopter-style right/left cyclic input) control. Servo 98, shown in phantom in FIG. 1, can be mounted similarly to servos 58, 59 if collective pitch control is desired. In embodiments having a fixed-pitch rotor system, rotor systems 3,5 are connected to swashplates 56', 57' by pitch links 119. Servos 58, 59 are connected to swashplates 56', 57' by links 125, 126. A feature of the present disclosure is that rotary wing vehicle 1 can be flown with as few as one or two cyclic servo actuators (servo 58, 59). In a "one-servo" flight mode, differential torque of motors 54, 61 controls yaw orientation, and servo 58 controls forward and backward flight. With only one cyclic servo, vehicle 1 can be flown much like an airplane having only rudder and elevator control. In the illustrative "two-servo" flight mode, servos 58, 59 provide fore/aft aircraft pitch and right/left aircraft roll control with differential torque of motors 54, 61 providing yaw control.

In operation, rotor hubs 101 rotate in opposite directions. Servos 58, 59 are controlled by onboard flight control electronics to tilt simultaneously swashplate 56' and swashplate 57' which then cyclically vary the blade pitch angle of rotating rotor blades 20 to tilt vehicle 1 in one of aircraft pitch direction 170 and aircraft roll direction 171. In another embodiment having collective pitch (see FIG. 11B), collective servo 98 and a third pitch link (not shown) are provided to vary the axial location of swashplates 56', 57' along common axis 7 and to vary the collective pitch of rotor blades 20, 22 using electronic Collective-Cyclic Pitch Mixing (CCPM). With collective-cyclic pitch mixing servos 58, 59, and 98 tilt swashplates 56' and 57' in unison to vary cyclic pitch and move swashplates 56', 57' axially in unison along common axis 7 to vary collective pitch.

The illustrative embodiment employs differential motor speed for yaw (heading) control while in a vertical flight configuration. Normally, coaxial helicopters use variable blade pitch and differential blade angle to control yaw motions in flight. In the present disclosure, differential torque generated by operating motors 54, 61 at different speeds

US 8,042,763 B2

5

relative to the fixed body of vehicle 1 generates yaw forces to stabilize and control yaw motion (i.e. rotation about common axis 7). In this method, the torque (and eventually the speed) of motor 54 is increased or decreased in response to a yaw motion of rotary wing vehicle 1 about vertical common axis 7. The torque (speed) of second motor 61 is adjusted automatically by an onboard computer system, contained within controller 55, in opposition to the torque (speed) of first motor 54 to maintain constant lift so that rotary wing vehicle 1 neither gains nor loses altitude.

Rotor blades 20 and 22 are coupled to rotary wing aircraft 1 and supported for rotation by rotor hubs 101. Rotor hubs 101 are further coupled for pivotable movement to an internal yolk 108, as shown best in FIG. 11A. Pivot axles 109 extend through rotor hub 101 and are received by yolk 108. Yolk 108 is adapted to couple a pair of rotor blades to hub 101 for rotation about common axis 7. Yolk 108 is further coupled to a first end of a pair of links 119. Each link 119 is further coupled on a second end to a perimeter edge of swashplate 56' or 57'. Thus, yolk 118 is pivoted by input from swashplate 56', 57' in response to linear motion input from servos 58, 59, or 98. This pivoting motion of yolk 118 in turn causes each rotor blade 20, 22 to pivot in response, thus increasing or decreasing the rotor blade pitch of rotor blades 20, 22.

As suggested in FIGS. 2A and 2B, a rotary wing vehicle 1 includes an upper section 2', first and second rotors 3 and 5, a middle section 4, a lower section 6, first and second power source modules 13, 14, and a payload 15' arranged in spaced apart relation along common axis 7. Referring now to FIGS. 2A-4, internal mechanical and electrical components within upper section 2' and middle section 4 of vehicle 1 are enclosed by a thin-walled upper body shell 10 and a middle body shell 11, respectively. A lower body shell 12 covers a portion of lower section 6, but could be extended to cover all of lower section 6. A feature of the present disclosure is that body shells 10, 11 are blow-molded from a plastic material such as polycarbonate or ABS, and, in conjunction with backbone 40, form a structure for rotary wing aircraft that has both a central strength component and a thin exterior cover component that together are stiff, strong and easy to manufacture.

As shown in FIG. 3, a rotary wing aircraft 1 in accordance with the present disclosure has a rotor system comprising a motor 54 operably connected to rotor blades 20 by means of a drive train such as gears 106,107 (FIG. 11). A pitch control such as a swashplate 56' (FIG. 10) is operably connected to rotor blades 20 to vary the cyclic and/or collective pitch of rotor blades 20 in response to output from a servo actuator such as servos 58,59 (FIG. 3) through linkages such as links 125,126 (FIG. 10). Power such as electricity from batteries (not shown) or fuel from a storage tank (not shown) in a power source module 13 flows through a power conduit across rotor system and provides power to operate controller 55, motor 54, and servos 58 and 59. Control signals from controller 55 flow along a signal conduit and regulate the speed of motor 54 and the positioning output of servos 58 and 59. The power conduit and signal conduit are conducted between an inflow side and an outflow side of rotor blades 20 through channels 96 formed in the structural spine or backbone 40 (FIGS. 7A, 7B, and 15) of vehicle 1.

In hovering flight, first rotor 3 and second rotor 5 rotate in opposite directions about common axis 7 forcing air downward in direction 24 and lifting vehicle 1 in an upwardly direction, as suggested in FIG. 2A. First rotor 3 has rotor blades 20 configured to rotate in direction 21, and second rotor 5 has rotor blades 22 configured to rotate in direction 23 about common axis 7. Because first rotor blades 20 and second rotor blades 22 are equipped with a cyclic pitch control,

6

vehicle 1 is configured for directional flight in direction 25 wherein common axis 7 is orientated substantially vertically.

Referring now to FIG. 2B, a second embodiment contemplated by the current disclosure is depicted having a booster module 8 appended to lower section 6 at a booster interface 9. Booster module 8 contains, for example, an auxiliary power source (not shown) to augment an internal power source contained in power modules 13 and 14 carried in vehicle 1. Illustratively, the auxiliary power source (not shown) and power modules 13 and 14 are electrical batteries 13 and 14. Booster module 8 includes left and right wings 16, 17 to provide additional lift for vehicle 1 in directional flight in direction 18 wherein common axis 7 is oriented substantially horizontally.

Airframe 40 forms a structural backbone of rotary wing vehicle 1 and generally runs vertically through the center of rotary wing vehicle 1 from upper section 2' to lower section 6, as shown best in FIG. 4. Illustratively, airframe 40 is a non-rotating core tube with a hollow interior channel 96 (FIG. 7A) or a cruciform beam 97 with exterior channels (FIG. 7B). First and second rotor modules 3 and 5, all components within upper section 2', middle section 4, and lower section 6 are coupled to airframe 40. Referring now to FIG. 7A, non-rotating hollow core tube 40 further acts as a conduit for electrical wiring 45, plumbing (not shown), and mechanical linkages (not shown) passing between components in upper section 2', middle section 4, and lower section 6 of rotary wing vehicle 1. Longitudinal slots 46 and 47 are provided as entry and exits points for wiring 45, plumbing, and linkages. Since non-rotating hollow core tube 40 and cruciform beam 97 are unitary and continuous between body sections 2, 4 and 6, the rigidity and light-weight structural properties of vehicle 1 are increased. Illustratively, non-rotating hollow core tube 40 and cruciform beam 97 are preferably made of wound or pultruded carbon graphite fiber, fiberglass, or aluminum alloy number 7075 (or similar) with an outside diameter (core tube 40) or width dimension (cruciform beam) of about 0.5 inches (13 mm) and a wall thickness of between about 0.03 inches (0.76 mm) and about 0.05 inches (1.3 mm).

Rotary wing vehicle 1 is arranged having three body sections, as shown best in FIG. 3. Upper section 2' is arranged having a horizon sensor/stabilizer 50, an electronic gyro stabilizer 51, a gyro mounting table 52 coupled to an upper end of core tube 40, a first motor speed controller 53, a first motor 54, a radio receiver, and controller 55. Middle section 4 includes a first swashplate 56', a second swashplate 57', a fore-aft cyclic servo 58, and a roll cyclic servo 59. Lower section 6 includes a second motor speed controller 60, a second motor 61, a radio battery 62, first and second battery modules 13 and 14, and payload module 15.

In the illustrated embodiment, horizon sensor/stabilizer 50 is a model "FS8 Copilot" model by FMA company, gyro stabilizer 51 is a "G500" model silicone ring gyro by JR company, motors 54, 61 are "B2041S" models by Hacker company, and motor speed controllers 53, 60 are "Pegasus 35" models by Castle Creations company which are computer-based digital programmable speed controllers. Rotary wing vehicle 1 is also configured to receive a GPS receiver/controller and telemetry system (not shown), arranged to be coupled to upper section 2'.

Interior components of rotary wing vehicle 1 are coupled to core tube 40 by ring mounts 70, as shown in FIG. 8. Ring mount 70 includes an annular inner portion 71 conforming to the annular exterior surface of core tube 40. Ring mount 70 includes radially extending mounting arms 72, 73, 74 having flanges 75, 76, 77 adapted to hold mechanical, electrical and other interior components of rotary wing vehicle 1. Ring

US 8,042,763 B2

7

mount 70 is arranged to support motor 54 in flange 75, motor speed controller 53 on flange 76, and radio receiver 55" on flange 77. Interior components of vehicle 1 are coupled, for example, to mounting flanges using a variety of fasteners (such as nylon ties through apertures 78) or adhesives. Annular portion 71 provides means for locking ring mount 70 to non-rotating hollow core tube 40 to prevent ring mount 70 from rotating or sliding axially along non-rotating hollow core tube 40. Means for locking ring mount 70 to non-rotating hollow core tube 40 includes fasteners (not shown) received by set screw receiver 79 or a variety of adhesives. A second ring mount 80, as shown in FIG. 9, includes an annular ring 81, arms 82 and 83, and axial posts 84, 85 for supporting body standoffs 86, 87, 88, swashplate anti-rotation arms 90 and 91, and swashplate links 92 and 93.

Servo module 81 includes ring mount 80 supporting pitch servo 58, roll servo 59, and universal body standoffs 86, 87 (as described in U.S. Provisional Patent Application No. 60/525, 585 to Arlton which is hereby incorporated by reference herein) which support middle body shell 11, as shown, for example, in FIG. 10. Ring mounts 70, 80 are arranged to incorporate and support many structural features of rotary wing vehicle 1. Ring mounts 70, 80 assist assembly of rotary wing vehicle 1 because ring mounts 70, 80 and associated interior components can be preassembled as subassemblies and then later assembled along with other modules to non-rotating hollow core tube 40 in a final manufacturing step.

Referring now to FIGS. 11A, 12A, 12B, 13A, 13B and 14, rotor module 3 includes a rotor mount 100, a rotor hub 101 having an internal gear 107, first and second ball bearings 102 and 103, a shaft 101A extending between bearings 102 and 103, a ring clip 104, motor 54, a planetary gearbox 105, a pinion gear 106, a blade yolk 108, pivot axles 109, axle end caps 110, torsion springs 111, and rotor blades 20. A motor mount 122 is receptive to gearbox 105 to couple motor 54 to rotor mount 100. When assembled, bearings 102, 103 are retained by ring clip 104 engaging slot 108 on a boss 112 extending from rotor mount 100. Blade 20 is held in place by a pin 113 extending through cap 110 and aperture 114 formed in axle 109. Axle 109 passes through a bearing aperture 117 formed in hub 101 and into an aperture 118 in yolk 108 when it is retained by another pin (not shown). Links 119 couple yolk 108 to swashplate 56'.

As shown in FIG. 11B, a rotor module adapted to support both cyclically and collectively pitchable rotor blades includes collective rotor hub 201 that is similar to hub 101 and receptive to a collective yolk frame 208 coupled to bosses 214 formed on an interior surface of hub 201 by fasteners 212. Collective yolk frame 208 supports the radial flight loads produced by rotor blades 20 acting through thrust bearings 203. Links 119 couple pitch arms 210 to swashplate 56'.

Illustratively, planetary gearbox 105 has a reducing speed ratio of about 4:1. Pinion gear on motor 54 has nine teeth and engages internal gear 107 on rotor hub 101 which has sixty teeth, so the total speed reduction ratio of rotor module 3 is about 26.7:1 (that is, the output shaft of motor 54 turns 26.7 times for each turn of rotor hub 101). This reduction ratio encourages the use of high efficiency electric motors running at high voltages and high speeds.

Illustratively, motor 54 is a brushless motor. In some applications, especially where flight times are short and economy is a factor (for example, in a short-range disposable munition) several low-cost brushed motors (i.e. motors having carbon brushes and rotating commutators) are used in place of one high-cost brushless motor 54 to turn rotor hub 101. In such cases, while rotor module 3 is shown having one motor 54 to drive rotor hub 101, it is within the scope of this disclosure to

8

include several motors around the circumference of rotor mount 100 to drive rotor hub 101 instead of only one. It is also anticipated that rotor hub 100 itself can be configured with wire coils and magnets to act as a motor so that no separate motors are required to drive rotor hub 101 about common axis 7.

Rotor blade 20 in the embodiment shown is injection molded of polycarbonate plastic material and is of the type described in U.S. Pat. No. 5,879,131 by Arlton, which patent is hereby incorporated by reference herein. Rotor blade 20 is free to flap upward and downward about 6 degrees about flapping axis 120 before tabs 121 on torsion springs 111 contact pitch axle 109 and resist further flapping. This means that rotor blades 20 can flap up and down freely in flight about +/-6 degrees and can fold upward 90 degrees and downward 90 degrees for storage or during a crash landing.

In the embodiment shown in the drawings, rotor mount 100 is injection molded in one piece from a thermoplastic material such as polycarbonate or nylon. Rotor hub 101 is injection molded in one piece from a thermoplastic material such as nylon or acetal. Rotor blades 20 are supported in flight by rotor hub 101 (which forms part of the exterior body shell of vehicle 1 instead of by traditional coaxial shafts coincident with common axis 7. This places rotor support bearings 102, 103 very close to rotor blades 20 and frees space within the central body portion of rotary wing vehicle 1 for other mechanical or electrical components. In a fixed-pitch rotor system (shown in the drawings) radial flight forces produced by rotating blades 20 are supported by internal yolk 108 which connects two rotor blades 20 and which includes an internal aperture surrounding and bypassing core tube 40, thus no special thrust bearings are required.

Referring now to FIG. 15, a coaxial rotor system in accordance with the current disclosure comprises core tube 40, two rotor systems 3, 5, two swashplates 56' and 57', and one servo module 81 coupled to non-rotating hollow core tube 40 in mirrored symmetry around servo module 81. While a coaxial rotor system with two rotors is disclosed, rotary wing vehicle 1 could be equipped with additional rotor systems (not shown) spaced apart along the length of non-rotating hollow core tube 40 for additional thrust or operational capabilities.

In the illustrated embodiment, rotary wing vehicle 1 has a fixed-pitch rotor system which requires only two servos 58, 59 for aircraft pitch (fore-aft cyclic) and aircraft roll (right-left cyclic) control. A third collective servo 98 can be mounted in a similar fashion in middle section 4, for instance, if collective pitch control is desired.

Rotor systems 3,5 are connected to swashplates 56', 57' by pitch links 119. Servos 58, 59 are connected to swashplates 56', 57' by links 125, 126. In operation, rotor hubs 101 rotate in opposite directions. Servos 58, 59 are controlled by onboard flight control electronics 55' to tilt simultaneously swashplate 56' and swashplate 57' which then cyclically vary the blade pitch angle of rotating rotor blades 20 to tilt vehicle 1 in one of aircraft pitch direction and aircraft roll direction. In another embodiment having collective pitch (see FIG. 11B), a third servo and third pitch link (not shown) are provided to vary the axial location of swashplates 56', 57' along common axis 7 and to vary the collective pitch of rotor blades 20, 22 using electronic Collective-Cyclic Pitch Mixing (CCPM). Using servos positioned to lie between rotor systems 3, 5 and directly coupling control swashplates 56', 57' with linkages to control a coaxial rotor system in this way is a feature of the embodiment.

An illustrative embodiment of the disclosure includes motors 54, 61 positioned to lie above and below rotor blades 20, 22 (see FIG. 25A) with power transmission between the

US 8,042,763 B2

9

rotor systems **3, 5** accomplished through electrical wiring **45** instead of mechanical shafting thereby reducing mechanical complexity and weight. In another embodiment (see FIG. **26**), motors **54, 61** are positioned to lie between the rotor blades **20, 22**, and servo actuators **58, 59** are positioned to lie in spaced-apart relation to locate rotor blades **20, 22** therebetween (see FIG. **26**). Because power and control of the rotor systems **3, 5** is entirely electrical in nature, the entire control system of rotary wing vehicle **1** can be operated electrically by digital computers and solid-state electronics without mechanical linkages or hydraulic amplification. Locating the motors **54, 61**, as shown in FIG. **25A**, eliminates the need for concentric rotating shafting between rotor blades **20, 22**, and positions servos **58, 59** to drive both swashplates **56'** (included in first pitch controller **56**) **57'** (included in second pitch controller **57**) directly.

A feature of the present disclosure is that vehicle **1** can be flown with as few as one or two cyclic servo actuators (servo **58, 59**). In a one-servo flight mode, differential torque of motors **54, 61** controls yaw orientation, and servo **58** controls forward and backward flight. With only one cyclic servo, vehicle **1** can be flown much like an airplane having only rudder and elevator control. In a two-servo flight mode, as illustrated in the drawings, servos **58, 59** provide fore/aft aircraft pitch and right/left aircraft roll control with differential torque of motors **54, 61** providing yaw control.

In another embodiment of the current disclosure, power to drive motors **54, 61** in flight is provided by high-capacity electric batteries **130** such as lithium-polymer or lithium-ion batteries, or fuel cells. Referring now to FIGS. **16A** and **16B**, power module **13** has six rechargeable lithium ion batteries **130** arranged in a hexagonal pattern around non-rotating hollow core tube **40** and wired in series to produce about 21.6 volts of electrical potential. Battery ring mount **131** is formed to include center aperture (ring) **132** to accommodate non-rotating hollow core tube **40** and flange **133** to hold batteries **130**. Power wires **45** from battery module **13** enter non-rotating hollow core tube **40** at opening **47** (see FIG. **7A**), and are routed through non-rotating hollow core tube **40** to motor speed controllers **53, 60**.

As shown best in FIG. **25A** multiple power modules **13, 14** are provided for additional energy capacity during flight and are, illustratively, wired in parallel to increase the electrical current available to motors **54, 61**. Flight times of rotary wing vehicle **1** can be adjusted by adjusting the number of power modules **13, 14** carried in flight.

Extra locking rings (or ring mounts with no radial arms) **135** are provided above and below power module **13, 14** to help couple power modules **13, 14** to non-rotating hollow core tube **40**, as shown, for example, in FIG. **4**. Since power modules **13, 14** are relatively heavy compared to other components of vehicle **1**, locking rings **135** prevent power modules **13, 14** from sliding along non-rotating hollow core tube **40** during a crash landing of rotary wing vehicle **1**. A feature of the present disclosure is that rotary wing vehicle **1** is well-suited to be manufactured and assembled in modules. Rotor, wing, control, power, booster, electronics, and payload modules are manufactured separately and slid onto core tube **40**. Electrical connectors for connections passing through openings **46, 47** in core tube **40** are mounted flush with the surface of core tube **40** to assist in assembly and disassembly of vehicle **1** for maintenance and repairs.

Energy density and power density are considerations in UAV design and can be applied to an aircraft as a whole. Aircraft with higher energy densities and power densities have better overall performance than aircraft with lower densities. In general, energy density and power density are

10

defined as the amount of energy and power available per unit weight. For example, the energy density of a fuel or electric battery (also known as "specific energy") corresponds to the amount of energy contained in a unit measure of fuel or battery (measured, for instance, in Nm/Kg or ft-lbs/slug).

Chemical (liquid) fuels tend to have higher energy densities than electric batteries. One additional characteristic of liquid fuel power as compared to electric battery power is that the weight of a liquid fueled aircraft decreases over the course of a flight (as much as 60%) as it burns fuel. Consequently the energy density of a liquid fueled aircraft (i.e., the energy available per unit weight of the aircraft) decreases slowly and power density (power available per unit weight) increases as it flies. This means that the performance of liquid fueled aircraft actually improves near the end of a flight.

In contrast, the overall power density of an electric-powered aircraft is constant throughout the flight because the maximum output power of the batteries is almost constant and the batteries do not lose weight as they discharge. Energy density also decreases quickly because the total energy available decreases. To improve energy and power density of the current disclosure, an auxiliary electric booster or power module **8** is provided that can be jettisoned in flight after its energy supply is depleted. Thus, booster module **8** comprises additional battery modules (not shown) assembled around common axis **7** with a mechanism to retain booster module **8** to rotary wing vehicle **1**.

In another embodiment, booster **8** includes an internal combustion engine (such as a diesel engine not shown) which drives an electric generator (not shown) to convert chemical energy contained in a chemical fuel to electrical energy. In other embodiments contemplated by this disclosure, a turbo-electric generator system (not shown) may be used to create electrical energy. A consideration of a booster module **8** containing such a gas-electric generator is that the entire weight of the module, fuel system, and engine, can be jettisoned at the end of a first flight phase leaving the relatively low weight rotary wing vehicle **1** to complete a second flight phase.

In the illustrative embodiment, booster module **8** includes foldable wings **16, 17** to increase lift in a horizontal flight mode of rotary wing vehicle **1**. As shown in FIG. **17**, wing **17** is folded about folding axis **140** for compact storage. Wings **16, 17** are attached at about their "quarter chord" location to pivot shafts (not shown). When deployed for flight with pivot shafts held rigidly perpendicular to common axis **7** (see also FIG. **2**), wing **16** is free to pivot about pitch axis **143** to find its own best angle of attack. Because wings **16, 17** are free to rotate about their own pitch axes in flight, appendages such as wings **16, 17** are sometimes referred to as "free-wings." It should be noted that wings **16, 17**, being free-wings, can operate efficiently over a wide speed range because of their ability to change pitch automatically to meet the oncoming airflow. Application of such a free wing to a rotary wing UAV is a feature of the disclosure.

In high-speed horizontal flight, common axis **7** is orientated substantially horizontally with rotor modules **3, 5** together acting like a single counter-rotating propeller to pull rotary wing vehicle **1** in a horizontal direction **18**. Wings **16, 17** help to lift lower section **6** and booster module **8** so that rotor modules **3, 5** can apply more power to forward propulsion and less to vertical lifting.

It should also be noted that the current disclosure does not require aerodynamic control surfaces (such as on wings **16, 17**) because cyclic control of rotor module **3, 5** provides control power for maneuvering in aircraft pitch (elevation) direction **144** and aircraft yaw (heading) direction **145** when common axis **7** is substantially horizontal. Airplane-style roll

US 8,042,763 B2

11

control (about common axis 7) during high-speed horizontal flight is accomplished through differential torque/speed of rotor modules 3, 5. This method of control for horizontal flight of a rotary-wing UAV is a feature of the illustrative embodiment.

Referring now to FIGS. 18A and 18B, when the energy of booster module 8 has been depleted, a command from on-board controller 55 of rotary wing vehicle 1 actuates a mechanism such as a latch (not shown) that separates booster module 8 from rotary wing vehicle 1 and booster module 8 falls away in direction 19. Rotary wing vehicle 1 then, in one flight mode, assumes a more vertical orientation and flies like a helicopter.

In another embodiment, booster module 8 includes a mission-specific payload 147 such as an explosive munition, dipping sonar, hydrophones, radio ID marker, or a sonobouy. As illustrated in FIG. 19, upon separation from rotary wing vehicle 1, booster module 8 falls away leaving a sonar or hydroponic system 147 or other sensor connected to rotary wing vehicle 1 by wire or fiber optic cable 146 so that rotary wing vehicle 1 can move payload 147 from place to place, deliver payload 147 accurately to a desired location, and act as a telemetry link between payload 147 and a remote receiver (not shown). This can be an effective method of, for example, monitoring a target or marking a ship at sea with a remote radio ID marker or other marking instrument.

FIG. 22 illustrates a method of delivering a marker comprising, for example, a sensor, or a marking device, such as indelible paint or a radio transmitter, to a remote location, in this case a ship on an open ocean 157. Vehicle 1 is shown approaching ship S (in frame), maneuvering to touch ship S and leaving the marker on ship S (in frame) and exiting the area (in frame). This method of marking is a feature of the present disclosure that allows a point of interest to be monitored after vehicle 1 has left the local area. Alternatively or in conjunction, vehicle 1 can retain a sensor when it leaves the local area which may, for instance, have taken a sample of the atmosphere near ship S, and return the sensor and sample to a remote processing point for further analysis by a mass spectrometer, biological or radiological measuring device or other such device (not shown). While the point of interest shown in the drawings as a ship S, it will be understood that ship S could be any other point of interest accessible to vehicle 1 such as a truck, aircraft, building, tower, power line, or open area of land.

Another embodiment of the current disclosure shown in FIGS. 20A, 20B and 20C, has unequal length folding, coaxial rotor blades 148, 149 with upper blades 148 having a greater span than lower blades 149. This is a feature arranged so that during a crash landing of vehicle when upper blades 148 contact the ground 155 before lower, shorter blades 149 so that upper blades 148 fold away from, or faster than, lower blades 149 thereby reducing the possibility that upper blades 148 and lower blades 149 will contact each other while still rotating at high speed. As shown in the drawings, lower blades 149 span about 20 to 22 inches (51 cm to 56 cm).

The ability to fold for compact storage and for landing is another feature of the current disclosure. As shown in FIGS. 21A and 21B, rotary wing vehicle 1 is compact enough to fit inside a standard A-size sonobouy tube used by the United States Navy. The unique core-tube structure of the current disclosure not only allows rotary wing vehicle 1 to be miniaturized to fit within a sonobouy tube, it also absorbs the forces of launch with a Charge Actuated Device (CAD) from an aircraft such as the Navy's P-3 maritime surveillance aircraft.

In one embodiment suggested in FIG. 21A, disposable launch canister 150 is provided to protect the aerodynamic

12

surfaces of rotary wing vehicle 1 as it is launched from an aircraft traveling 150-250 knots at an altitude of 10,000 to 20,000 feet. A parachute (not shown) attached to canister 150 slows and stabilizes the descent of canister 150 which separates from rotary wing vehicle 1 at a lower altitude. Illustratively, rotary wing vehicle 1 is shown to scale and has a body length 30 of about 24 inches (51 cm), upper diameter 31 of about 2.25 inches (5.7 cm), upper rotor diameter 32 of about 28 inches (71 cm) and lower rotor diameter 33 of about 24 inches (61 cm) or less. Booster module 8 has a length 34 of about 12 inches (30 cm). First rotor 3 and second rotor 5 rotate at about 1400 RPM in hovering flight and at about or above 2000 RPM during vertical ascent and high-speed maneuvers.

Another embodiment contemplated by this disclosure is adapted for use with a munition for assessing target damage done by the munition. As shown in FIG. 23, vehicle 1 is adapted for use with the munition, illustratively shown in the drawings as a gravity-delivered bomb 160. Bomb 160 is dropped from a launch platform such as an aircraft. In operation, gravity-delivered bomb 160 transports vehicle 1 to the vicinity of a target site whereupon vehicle 1 is released to fall away from bomb 160, illustratively slowed by use of an auxiliary drag chute 162, or ejected from bomb 160 by an explosive charge-actuated device, before bomb 160 reaches its target. Vehicle 1 then orbits or hovers in the target area near the impact site to observe bomb damage and transmits video and other information to a remote operator (not shown). This method of munition damage assessment is a feature of the disclosure which provides immediate battle damage assessments without requiring a launch platform to remain in the strike zone and reduces the need for subsequent strikes against the same target while minimizing risk to human crew members.

One feature of the disclosure is the non-rotating hollow core tube 40 or cruciform beam structural backbone that can, in some embodiments, double as a conduit for wiring and plumbing. A method or system of assembling mechanical and electrical components to the core or backbone is described to promote ease of assembly of a variety of UAVs from a kit of basic modules.

Another feature is that each of the rotors 20, 22 of the coaxial system of the current disclosure are driven by one or more separate electric motors, and the motors are positioned to lie on opposite sides of the rotors, with power transmission to and between the motors accomplished through electrical wiring (passing through the hollow core) instead of mechanical shafting, clutches, and gears. Compact rotor assemblies support the rotors for rotation without the need for traditional rotating coaxial shafting.

Still another feature is that a swashplate control system and one or more electric motors are provided for each rotor and are positioned to lie on opposite sides of each rotor thereby simplifying the mechanical and electrical connections needed to drive and control the rotors. Rotor modules are provided to quickly and easily assemble systems of rotors to the hollow core. Multiple rotor modules and swashplates are controlled by a single group of servos housed in a module.

An additional feature is that folding rotor blades 148, 149 are of unequal length. On the current disclosure with counter-rotating rotors 3, 5, folding blades 148, 149 of unequal length reduce the chance that the blades will contact one another as they fold at high speed during a crash-landing.

Another feature of the disclosure is a method of improving energy and power density on UAVs which can include a booster module 8 which is separable from the main vehicle in flight. A booster module 8 is provided to operate the UAV during a first flight phase. At the end of the first flight phase,

US 8,042,763 B2

13

the booster module falls away thereby reducing the weight of the UAV for continued operation in a second flight phase. On electric powered UAVs the power module can comprise a pack of batteries with or without an auxiliary lifting surface which is jettisoned in flight after the battery power is depleted, or payloads specific to a particular mission.

The invention claimed is:

- 1. A rotary wing aircraft comprising a non-rotating structural backbone, a first rotor system coupled to the non-rotating structural backbone including first variable pitch rotor blades supported by a first rotor shaft for rotation about an axis of rotation in a first rotor plane and controlled by a first blade pitch controller which includes cyclic pitch control, a second rotor system coupled to the non-rotating structural backbone including second variable pitch rotor blades supported by a second rotor shaft for rotation about the axis of rotation in a second rotor plane and controlled by a second blade pitch controller which includes cyclic pitch control, the second rotor plane being positioned to lie in axially spaced apart relation to the first rotor plane along the axis of rotation, wherein the first blade pitch controller is coupled to the non-rotating structural backbone so that neither the first rotor shaft nor the second rotor shaft extends through the first blade pitch controller.
- 2. The rotary wing aircraft of claim 1, wherein the first blade pitch controller and second blade pitch controller are connected by a common pitch linkage and operation of the common pitch linkage operates the first blade pitch controller and second blade pitch controller simultaneously.
- 3. The rotary wing aircraft of claim 1, wherein the first blade pitch controller is a first swashplate surrounding the

14

non-rotating structural backbone and the first swashplate is axially spaced apart along the axis of rotation from the first rotor plane.

- 4. The rotary wing aircraft of claim 1, further including a first motor fixed to the non-rotating structural backbone and operably connected to the first rotor shaft by a first drive gear fixed to the first rotor shaft, and the diameter of the first blade pitch controller is smaller than the diameter of the first drive gear.
- 5. The rotary wing aircraft of claim 1, further including a first motor fixed to the non-rotating structural backbone to drive the first rotor blades about the axis of rotation, and the first motor and first blade pitch controller are positioned to lie on opposite sides of the first rotor plane.
- 6. The rotary wing aircraft of claim 1, wherein the second blade pitch controller is coupled to the non-rotating structural backbone so that neither the first rotor shaft nor the second rotor shaft extends parallel to the axis of rotation through the second blade pitch controller.
- 7. The rotary wing aircraft of claim 6, wherein the second blade pitch controller is a second swashplate surrounding the non-rotating structural backbone and the second swashplate is axially spaced apart along the axis of rotation from the second rotor plane.
- 8. The rotary wing aircraft of claim 6, further including a second motor fixed to the non-rotating structural backbone to drive the second rotor blades about the axis of rotation, and the second motor and second blade pitch controller are positioned to lie on opposite sides of the second rotor plane.
- 9. The rotary wing aircraft of claim 6, further including a second motor fixed to the non-rotating structural backbone to drive the second rotor blades about the axis of rotation, and the second motor and second blade pitch controller are positioned to lie on opposite sides of the second rotor plane.

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**UNITED STATES COURT OF APPEALS
FOR THE FEDERAL CIRCUIT**

CERTIFICATE OF COMPLIANCE WITH TYPE-VOLUME LIMITATIONS

Case Number: 2021-2049, 2024-1084, 2024-1159

Short Case Caption: Arlton v. Aerovironment, Inc.

Instructions: When computing a word, line, or page count, you may exclude any items listed as exempted under Fed. R. App. P. 5(c), Fed. R. App. P. 21(d), Fed. R. App. P. 27(d)(2), Fed. R. App. P. 32(f), or Fed. Cir. R. 32(b)(2).

The foregoing filing complies with the relevant type-volume limitation of the Federal Rules of Appellate Procedure and Federal Circuit Rules because it meets one of the following:

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Date: 09/10/2024

Signature: /s/ Deborah Pollack-Milgate

Name: Deborah Pollack-Milgate

**UNITED STATES COURT OF APPEALS
FOR THE FEDERAL CIRCUIT**

CERTIFICATE OF SERVICE

Case Number 2021-2049, 2024-1084, 2024-1159

Short Case Caption Arlton v. Aerovironment, Inc.

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Additional pages attached.

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