

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

SILENCERCO WEAPONS RESEARCH, LLC,

Petitioner,

v.

HUXWRX SAFETY CO. LLC,

Patent Owner.

Case IPR2024-01214

Patent 8,286,750

PATENT OWNER'S RESPONSE

TABLE OF CONTENTS

I.	INTRODUCTION.....	1
	A. HuxWrx Safety Co. LLC.....	1
	B. Summary of Petition and Institution Decision.....	2
II.	'750 PATENT	4
	A. Technology Background and Overview.....	4
	B. Prosecution History	8
	C. Claims 2, 3, 6, 9, 12-14, 18 and 20	9
	D. Person of Ordinary Skill in the Art	9
III.	CLAIM CONSTRUCTION	9
	A. “radially serpentine”.....	10
	B. “at least one of” [axially serpentine and radially serpentine]	17
	C. “a common off axis chamber” / “a plurality of deflectors . . . configured to deflect the energy from the high energy material to the common off axis chamber	17
	D. “fluid outlet”.....	17
IV.	LEGAL STANDARDS.....	21
	A. Anticipation	21
	B. Obviousness.....	22
V.	PRIOR ART REFERENCES.....	24
	A. Thurler	24

B. Bouton	26
C. Barlowatz.....	28
D. Reeves.....	29
E. Eichenseher.....	31
VI. PETITIONER HAS FAILED TO SHOW THAT CLAIMS 2, 3, 6, 9, 12-14, 18, OR 20 ARE ANTICIPATED OR RENDERED OBVIOUS OVER THE ASSERTED GROUNDS.	32
A. Ground 1: Thurler Cannot Anticipate Claim 9 Because It Does Not Disclose a “Radially Serpentine” Pathway.	33
B. Ground 2: Thurler Does Not Render Claims 6 or 9 Obvious.	35
1. Claim 6.....	35
2. Claim 9.....	37
C. Ground 3: Thurler in View of Bouton Does Not Render Claim 18 Obvious.	38
D. Ground 4: Thurler in View of Barlowatz Does Not Render Claim 6, 9, 12, 13, 14, or 20 Obvious.....	41
E. Ground 5: Barlowatz Does Not Anticipate Claim 9 or 20.....	45
F. Ground 6: Barlowatz Does Not Render Claim 9 or 20 Obvious.	48
G. Ground 7: Barlowatz in view of Reeves Does Not Render Claim 2 Obvious.	50
H. Ground 8: Eichenseher in View of Barlowatz Does Not Render Claims 3, 9, or 18 Obvious.....	51
VII. CONCLUSION	56

TABLE OF AUTHORITIES

Cases

<i>CFMT, Inc. v. YieldUp Int’l Corp.</i> , 349 F.3d 1333 (Fed. Cir. 2003).....	23
<i>Continental Can Co. USA, Inc. v. Monsanto Co.</i> , 948 F.2d 1264 (Fed. Cir. 1991)	22
<i>Ecolochem, Inc. v. S. Cal. Edison Co.</i> , 227 F.3d 1361 (Fed. Cir. 2000)	33
<i>Garmin Int’l, Inc. v. Patent of Cuozzo Speed Techs. LLC</i> , Case No. IPR2012-00001 (PTAB Jan. 9, 2013).....	23
<i>Hansgirg v. Kemmer</i> , 102 F.2d 212 (C.C.P.A. 1939)	22
<i>In re Arkley</i> , 455 F.2d 586 (C.C.P.A. 1972)	22
<i>In re Kahn</i> , 441 F.3d 977 (Fed. Cir. 2006)	23
<i>In re Oelrich</i> , 666 F.2d 578 (C.C.P.A. 1981)	22
<i>In re Rijckaert</i> , 9 F.3d 1531 (Fed. Cir. 1993).....	23
<i>In re Royka</i> , 490 F.2d 981 (C.C.P.A. 1974)	23
<i>Innogenetics, N.V. v. Abbott Labs.</i> , 512 F.3d 1363 (Fed. Cir. 2008)	23
<i>KSR Int’l Co. v. Teleflex Inc.</i> , 550 U.S. 398 (2007).....	23
<i>Leo Pharm. Prods. v. Rea</i> , 726 F.3d 1346 (Fed. Cir. 2013)	32

<i>LG Elecs., Inc. v. Cellular Commc 'ns Equip. LLC</i> , IPR2016-00197 (PTAB April 29, 2016).....	24
<i>Net MoneyIN, Inc. v. VeriSign, Inc.</i> , 545 F.3d 1359 (Fed. Cir. 2008)	22
<i>Real Time Data, LLC v. Iancu</i> , 912 F.3d 1368 (Fed. Cir. 2019)	10, 17
<i>Resqnet.com, Inc. v. Lansa, Inc.</i> , 346 F.3d 1374 (Fed. Cir. 2003)	47
<i>SuperGuide Corp. v. DirecTV Enters.</i> , 358 F.3d 870 (Fed. Cir. 2004).....	17
<i>TQ Delta, LLC v. Cisco Sys.</i> , 942 F.3d 1352 (Fed. Cir. 2019)	37, 56
<i>VirnetX Inc. v. Mangrove Partners Master Fund, Ltd.</i> , 778 F. App'x 897 (Fed. Cir. 2019)	20
<i>Vivid Techs., Inc. v. Am. Sci. & Eng'g, Inc.</i> , 200 F.3d 795 (Fed. Cir. 1999).....	10
Rules, Statutes, and Authorities	
35 U.S.C. § 102	21, 22
35 U.S.C. § 103	23
35 U.S.C. § 103(a)	23
37 C.F.R. § 1.68	11

TABLE OF EXHIBITS

Exhibit	Description
2001	Declaration of G. Paul Neitzel, Ph.D. Pursuant to 37 C.F.R. § 1.68
2002	Transcript of the Deposition of John Nixon

Patent Owner HuxWrx Safety Co. LLC (“HuxWrx” or “Patent Owner”) hereby submits this Patent Owner’s Response to Petitioner SilencerCo Weapons Research, LLC’s (“SilencerCo” or “Petitioner”) Petition for Inter Partes Review, challenging all claims (1-22) of U.S. Patent No. 8,286,750 (the “’750 Patent”). In light of the art identified in the Petition and the Board’s analysis reflected in the Institution Decision, Patent Owner explains below why claims 2, 3, 6, 9, 12-14, 18 and 20 should be sustained over the Petitioned Grounds while concurrently seeking to amend the balance of the claims¹ to more distinctly claim its inventions.

I. INTRODUCTION

A. HuxWrx Safety Co. LLC

HuxWrx is an innovator in the design of suppressors for firearms. HuxWrx’s innovations have ushered in a sea change in the suppressor market and have benefited customers immensely. In order to protect its inventions, HuxWrx has pursued a comprehensive patent strategy and owns dozens of patents worldwide, including the ’750 Patent at issue here. HuxWrx markets and sells its suppressors throughout the world, not only to the consumer market, but also to law enforcement and the U.S. military.

¹ Patent Owner’s motion to amend as to claims 2, 3, 6, 9, 12-14, and 20 is contingent on the Board finding these claims unpatentable. Patent Owner’s motion to amend as to claims 1, 4, 5, 7, 8, 10, 11, 15-17, 19, 21, and 22 is not contingent.

B. Summary of Petition and Institution Decision.

Petitioner sought review of all 22 claims of the '750 Patent on the Grounds set forth below. *See* Paper 2 (“Pet.”) at 1, 31.

Ground	Claims	35 U.S.C.	Reference(s)
1	1, 4, 5, 7-9, 15-17, 19, and 22	§102	Thurler
2	1, 4-11, 15-17, 19, 21, and 22	§103	Thurler
3	18	§103	Thurler + Bouton
4	1, 4–17, 19–22	§103	Thurler + Barlowatz
5	1, 9, 19, 20	§102	Barlowatz
6	1, 9, 19, 20	§103	Barlowatz
7	2	§103	Barlowatz + Reeves
8	1, 3–5, 8, 9, 18, 19	§103	Eichenseher + Barlowatz

In the Institution Decision, the Board addressed proposed Grounds 1-2, 4-6, and 8 as applied to the independent claims. Paper 7 (“ID”) at 22-37. The Board found that Petitioner demonstrated a reasonable likelihood of showing anticipation of the independent claims by Thurler (Ground 1). ID at 22. Of note, the Board agreed with Petitioner that Thurler disclosed walls that define a pathway that is “axially serpentine,” but did not agree that Thurler disclosed a pathway that was “radially serpentine.” *Id.* at 25. The Board concluded that this was not fatal to Petitioner’s challenge because the independent claims require only one or the

other. *Id.* at 26 (referencing the Board’s analysis of “at least one of” in § II.C.2).

The Board otherwise found the limitations of the independent claims likely shown by Thurler, and, in accordance with applicable law, instituted trial on all petitioned grounds for all claims. ID at 27-29, 37.

As to the other Grounds examined, the Board “question[ed] whether Petitioner demonstrates a reasonable likelihood of prevailing” on at least one claim, highlighting at least the following flaws in Petitioner’s assertions:

- Ground 2 (§103 over Thurler): Lack of adequate rationale to modify the eccentric tubes in Thurler to be concentric. ID at 29-31.
- Ground 4 (§103 over Thurler and Barlowatz): Barlowatz fails to teach an axially or radially serpentine fluid pathway. ID at 32-33.
- Ground 5 (§102 over Barlowatz): As noted for Ground 4, Barlowatz fails to teach either an axially or radially serpentine fluid pathway. ID at 34.
- Ground 6 (§103 over Barlowatz): In addition to the reasoning for Ground 5, Petitioner presents no rationale to modify Barlowatz to achieve either of the claimed serpentine pathways. ID at 35.
- Ground 8 (§103 over Eichenseher and Barlowatz): Neither Eichenseher nor the proposed combination with Barlowatz provide axially or radially serpentine pathways. ID at 36.

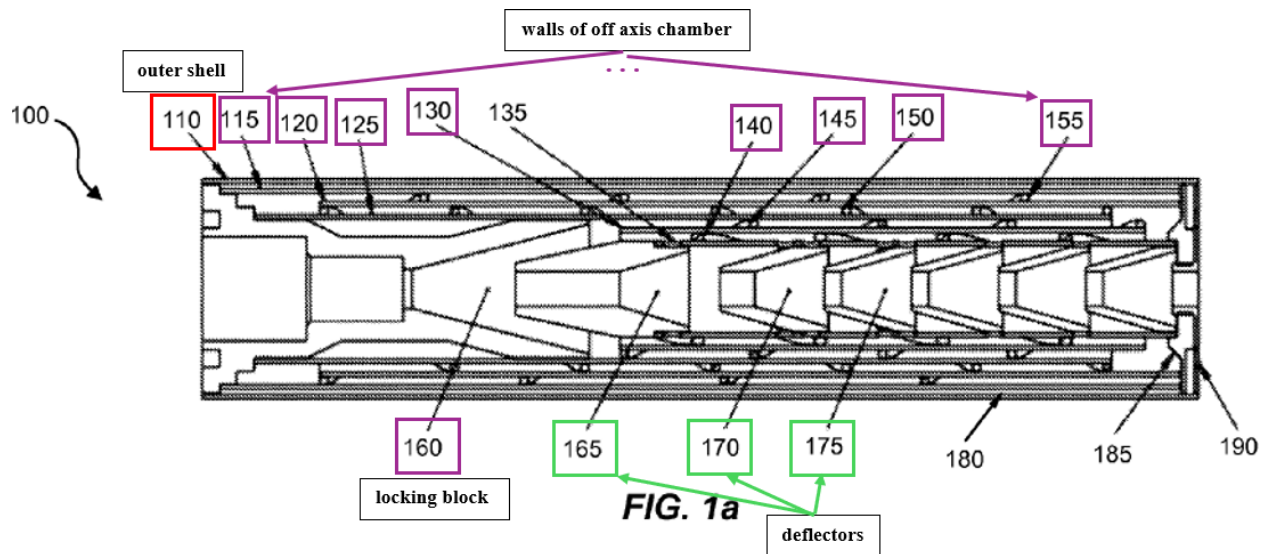
The Board did not address Grounds 3 or 7.

II. '750 PATENT

A. Technology Background and Overview

The '750 Patent relates to energy capture and control devices to address problems associated with high energy sources, in particular weapons. *See, e.g.*, Ex. 1001, 1:13-18; 4:3-4; 8:39; 8:43-50; 8:59-62; 9:23-25; 10:22-24. “High energy sources can produce undesirable levels of acoustic noise and/or particulate pollution.” Ex. 1001, 1:13-14. “In the field of firearm sound suppression, basic sound suppression technology has varied only modestly over the past hundred years.” Ex. 1001, 1:32-34. “Generally, sound suppression designs are based on internal baffles” that “direct gases into” various “flow patterns with optional expansion chambers” and may use sound-absorbing fluid. Ex. 1001, 1:38-48. But “challenges still remain in achieving a long service life suppressor with low maintenance requirements and high acoustic suppression performance.” Ex. 1001, 1:48-52.

The '750 Patent describes inventive energy capture and control devices “exemplified in terms of firearms, and more specifically in terms of silencer devices for sniper rifles.” Ex. 1001, 10:22-24. Figure 1a illustrates such a device in cross-section view from the side:



Ex. 1001, Fig. 1a (annotated); 1:56-58. This silencer/suppressor includes an outer shell (110) connected to a firearm through locking block (160) with a central chamber including deflectors (165, 170, 175) that allow the high energy material (e.g., a projectile) to pass through “while redirecting at least a portion of gases, sound/shock waves, and/or particulates into the off axis chamber.” Ex. 1001, 4:19-26; 5:32-49. The off axis chamber includes “multiple internal walls 115, 120, 125, 130, 140, 145, 150, and/or 155 defining a serpentine or winding fluid pathway.” Ex. 1001, 4:27-29.

The '750 Patent explains that these serpentine fluid pathways “provide an increased volume for fluid expansion and increased acoustic absorbent path length.” Ex. 1001, 4:29-31. The '750 Patent describes two types of serpentine pathways: axially serpentine and radially serpentine. Ex. 1001, 4:31-41. An “axially serpentine fluid pathway” “causes fluids received in the off axis chamber

to travel back and forth along a length of the off axis chamber.” Ex. 1001, 4:32-34. A “radially serpentine fluid pathway” “causes the fluids received in the off axis chamber to flow back and forth around a radius of the off axis chamber,” which can include such flow while traversing the length of the chamber or not. Ex. 1001, 4:34-41; *see also* Section III.A (discussing construction of “radially serpentine”).

Figure 1b illustrates a cross-sectional view of the device of Figure 1a from its outlet end opposite the locking block. Ex. 1001, 1:59-60; 5:2-4. While Figure 1b illustrates tubes nested within an octagonally-shaped outer shell, the outer shell can also have a circular cross-section or other shape. Ex. 1001, 5:2-4; 7:46-49. The ’750 Patent provides that the outer shell can include an end cap at the outlet end that allows fluid to escape from the off axis chamber. Ex. 1001, 7:49-51. Figure 8a illustrates a tube cap with outlet slits 187 that correspond to the outermost tube of the off axis chamber:

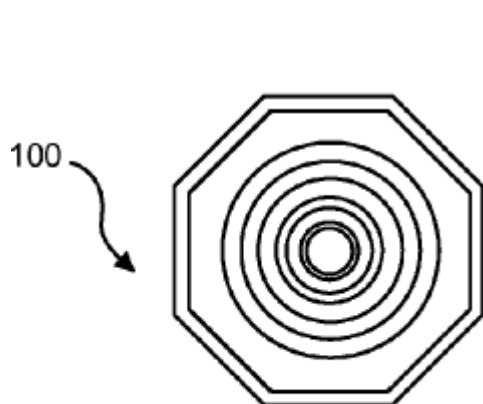


FIG. 1b

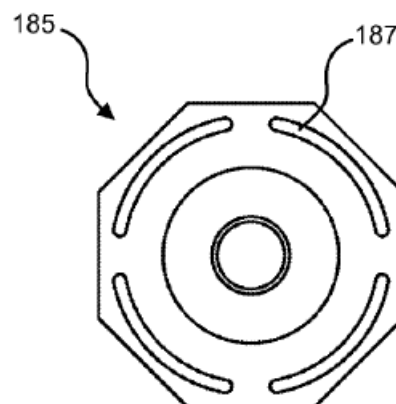


FIG. 8a

Ex. 1001, Figs. 1b, 8a. The outlet slits correspond to the shape of the outermost tube “to enable gases from the tube to pass therethrough.” Ex. 1001, 7:55-57. The ’750 Patent explains that without “sufficient slits” “there is a potential for gases to be at least partially blocked from exiting the tube” and thus the need for a pathway as illustrated in Figures 8a and b. Ex. 1001, 7:57-63. The ’750 Patent likewise describes an end cap with apertures smaller than the slits of the tube cap to control the exit of fluids from the off axis chamber. Ex. 1001, 7:64-8:2. The ’750 Patent notes that these apertures might be adjusted to change the amount of sound suppression and though “[c]ompletely blocking the discharge of such gases, waves, and the like, is another option,” that approach “can have increased detrimental effects on the high energy discharge device to which the energy capture device is attached.” Ex. 1001, 8:2-12. Figures 9a and 9b show an example of such an end cap from the end view and in perspective:

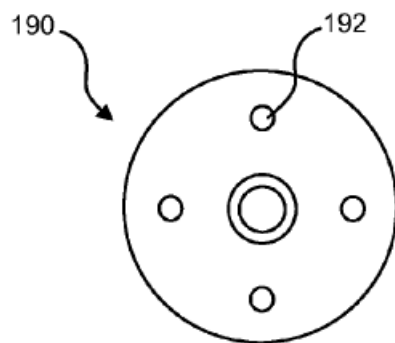


FIG. 9a

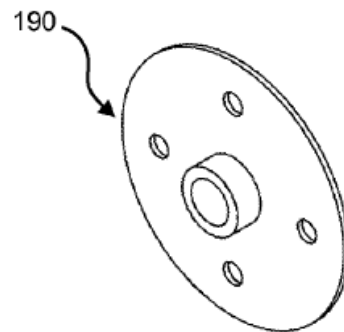


FIG. 9b

Ex. 1001, Figs. 9a, 9b.

Based on these disclosed inventions, the '750 Patent claims an energy capture and control device at various levels of specificity. The specific claims at issue in this Response are addressed below with a full listing of the claims in Appendix A.

B. Prosecution History

The prosecution history of the application that led to the '750 Patent includes:

- 9/30/2011 Office Action (Ex. 1004, 114-26);
- Applicant's 12/30/2011 Amendment and Response (*id.*, 087-101);
- 2/8/2012 Office Action (*id.*, 067-079); and
- Applicant's 5/29/12 Amendment / Response (*id.*, 047-65).

The Patent Office issued a Notice of Allowance on 09/12/2012. *Id.*, 031-37. The Notice provides a list of the originally-filed claim numbers with their final claim numbers. *Id.* at 040. Of potential relevance to the arguments provided in this Response, the Applicant consistently explained the nature of a “radially serpentine” pathway as allowing fluid to flow “clockwise to counter-clockwise” around an axis. *See, e.g., id.* 054, 061, 093, 095. The Applicant also noted specifically that the claims required “a fluid outlet” from the “off axis chamber” that “presents an outlet for fluids to escape the off axis chamber and the device *without* returning to the central chamber.” *Id.*, 054 (emphasis in original). As the

Applicant explained, “[t]his allows fluids to escape from the device without creating excessive back pressure in the host weapon.” *Id.*; *see also id.*, 093-94.

C. Claims 2, 3, 6, 9, 12-14, 18 and 20

This Response addresses the patentability of dependent claims 2, 3, 6, 9, 12-14, 18 and 20 over the petitioned grounds. Claims 2, 3, 6, 9, 12-14, 18 ultimately depend from independent claim 1, and claim 20 depends from independent claim 19. A full listing of the claims is provided in Appendix A, and the relevant limitations are addressed below in response to the petitioned grounds.

D. Person of Ordinary Skill in the Art

Petitioner asserts that a person of ordinary skill in the art (“POSITA”) at the time of the invention for the ’750 patent “would have had a relevant technical degree in Mechanical Engineering, Fluid Engineering, or the like, and 2-3 years of experience researching, designing, manufacturing, or assessing ESDs [energy suppression devices], though less education may be sufficient with additional experience, and *vice versa*.” *See* Pet. at 6. Because this definition does not affect Patent Owner’s arguments in favor of patentability and/or amendment, and solely for the purposes of this Patent Owner Response and accompanying MTA, Patent Owner and its expert apply the same definition.

III. CLAIM CONSTRUCTION

Petitioner asserts that no “specific constructions are required at this time” but articulates its interpretation of the “ordinary and customary meanings (OCM)”

of four terms, with its expert addressing a fifth term. Pet. at 12-19; Ex. 1013, ¶¶101-35. The Board discussed two of these interpretations in its Institution Decision. ID at 10-16. Patent Owner agrees that no construction of any term may be necessary to resolve the issues in this IPR. *Real Time Data, LLC v. Iancu*, 912 F.3d 1368, 1375 (Fed. Cir. 2019) (“The Board is required to construe ‘only those terms . . . that are in controversy, and only to the extent necessary to resolve the controversy.’” (quoting *Vivid Techs., Inc. v. Am. Sci. & Eng'g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999))). But Patent Owner addresses issues with Petitioner’s interpretations below and clarifies some of the issues with respect to the term “radially serpentine.”

A. “radially serpentine”

Patent Owner agrees with the Board’s conclusion in the ID that “‘radially serpentine’ as recited in the claims of the ’750 patent [] mean[s] a back and forth flow around a radius of the off axis chamber.” ID at 14. This is consistent with the ’750 patent’s statements that “a radially serpentine fluid pathway [] causes the fluids received in the off axis chamber to flow back and forth around a radius of the off axis chamber” and that “in another aspect . . . a radially serpentine fluid pathway [] causes the fluids . . . to flow back and forth around a radius of the off axis chamber while also traversing a length of the off axis chamber.” Ex. 1001, 4:34-41. It is also consistent with the prosecution history. Petitioner seeks to add

limitations requiring that this “back and forth” flow must occur “while advancing outwardly along a radius of the off-axis chamber” and include at least two changes of direction. Neither of these additions are appropriately included in the meaning of “radially serpentine.”

Petitioner and its expert provide no support for their contention that “back and forth” movement requires at least two changes of direction. Pet. at 17; Ex. 1013, ¶130. The Board correctly rejected this position in its preliminary decision. ID at 12-13. The literal meaning of the words describes a single change from one direction to another direction consistent with the ordinary meaning of “serpentine.” Neitzel Decl.² ¶50. This interpretation is also consistent with the Applicant’s repeated description of this flow as being a change from clockwise to counter-clockwise during prosecution. *See*, Ex. 1004, at 054, 061, 093, 095.

There is likewise no basis in the ’750 Patent, its prosecution history, or otherwise to require that a “radially serpentine” fluid pathway only directs flow outwardly along a radius of the off axis chamber. The Board’s initial decision found the same. ID at 13. The Board further noted that “[n]either Mr. Nixon nor Petitioner identifies any part of the ’750 patent or its prosecution history that imposes such a directional limitation, nor does our review reveal such support.” ID

² “Neitzel Decl.” refers to the Declaration of G. Paul Neitzel, Ph.D. Pursuant to 37 C.F.R. § 1.68 attached to this Response as Exhibit 2001.

at 13. Patent Owner agrees and the Board's conclusion rejecting this addition to the meaning of "radially serpentine" is sound. ID at 13-14; *see also* Neitzel Decl. ¶51.

Patent Owner nevertheless seeks to clarify some of Petitioner's characterizations of a "radially serpentine" pathway that were addressed in the preliminary decision. As the Board noted, the '750 patent's specification states that a "radially serpentine fluid pathway" "causes the fluids received in the off axis chamber to flow back and forth around a radius of the off axis chamber." Ex. 1001, 4:34-37. The specification also provides that "[i]n another aspect, the fluid pathway *can be a radially serpentine pathway* which causes the fluids to flow back and forth around a radius of the off axis chamber *while also traversing a length of the off axis chamber.*" Ex. 1001, 4:37-41 (emphasis added). That is, a fluid pathway can remain "radially serpentine" while also moving in another direction, specifically including traversing the length of the chamber.

Petitioner and its expert provide two examples from the patent that they admit are "radially serpentine." Specifically, Figures 1 and 2 from the expert's declaration depict:

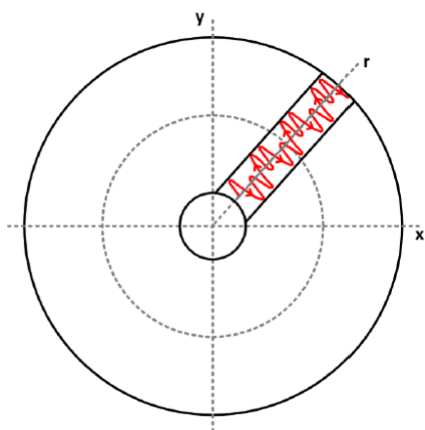


Figure 1

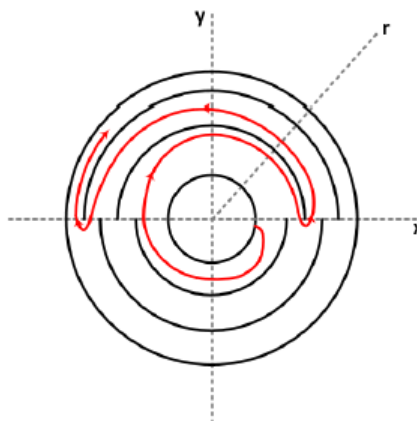


Figure 2

Ex. 1013, ¶¶127-28; Figs. 1 (omitting 2nd perspective) and 2; *see also* Pet. at 15 and 17. According to Petitioner’s expert, “a POSITA reading lines 34-37 in column 4 of the ’750 Patent would understand a ‘radially serpentine fluid pathway’ as a fluid pathway that winds back and forth around a radius that extends outwardly from a central point to an exterior of the ’750 Patent’s ESD and is normal to the axis extending through the length of the ’750 Patent’s ESD,” as illustrated in Figure 1. Ex. 1013, ¶ 127. Figure 1, as drawn by Petitioner’s expert, reflects a pathway in red that moves across the radius r in one direction and then back in another direction. Setting aside the multiple changes of direction and its advancement outward, this captures an example of flow “around a radius,” albeit with narrow turns around the radius. *See* Neitzel Decl. ¶¶55-57.

Figure 2 depicts what Petitioner’s expert characterizes as “the radially serpentine fluid pathway illustrated in FIG. 14” “that serpentine back (*i.e.*, counterclockwise) and forth (*i.e.*, clockwise) while advancing radially outward

through a series of annular spaces that are connected and progressively larger.” Ex. 1013, ¶128; Fig. 2. As shown, this pathway crosses over and back of the radius r just as in Figure 1, but with broader turns about the radius r . One could also select a different radius r' where the pathway crosses closer or further from the center of the off axis chamber, or more frequently. *See, e.g.*, Neitzel Decl. ¶59. In either case, the flow path could also be advancing along the length of the chamber (as described at 4:37-41) which would be into or out of the page as drawn. *See* Ex. 2002 (Nixon Dep. at 20:7-21:4 (describing his Figure 1 as looking down either end of a suppressor) *and* 27:2-12 (describing his Figure 2 showing same perspective)).

Petitioner and its expert admit that the flow paths depicted in Figures 1 and 2 are “radially serpentine.” Ex. 1013, ¶¶127-28; Pet. at 15, 17. Figure 1 depicts at least one representation of what is described at 4:34-37 of the specification, and Figure 2 represents the pathway illustrated in the patent’s Figure 14. Ex. 1013, ¶¶127-28. Accordingly, when the Applicant stated during prosecution that “[s]upport for radially serpentine flow can be found at page 7, lines 21-24 and FIG. 14” of the patent, there was no misrepresentation. Ex. 1004, 094; *see also id.* 054. The cited “page 7, lines 20-22” of the originally-filed application correspond to Col. 4:34-37. *Compare* Ex. 1004 at 252, *with* ’750 Patent, 4:34-37. Petitioner’s expert’s contention that the reference to the “axis” was somehow a misrepresentation is also misplaced. A radius extends from an origin of a

cylindrical coordinate systems as shown in all of his figures, and in the case of a cylinder like that in Figure 14 of the patent, that origin is the common axis that extends along the length of the cylinders. *See* Neitzel Decl. ¶61.

Moreover, to the extent there is a dispute over the description of a “radially serpentine” pathway in the words of the specification, the Applicant repeatedly told the Examiner that the flow path shown in Figure 14 of the ’750 Patent (through units 500, 505 and 510) demonstrates a radially serpentine pathway “in which fluid would flow back and forth from clockwise to counter-clockwise along the longitudinal axis.” *See* Ex. 1004 at 054; *see also id.* at 093. As depicted by Petitioner and its expert in their Figure 2, this flow path which flows from clockwise to counter-clockwise around a radius constitutes a “radially serpentine” pathway:

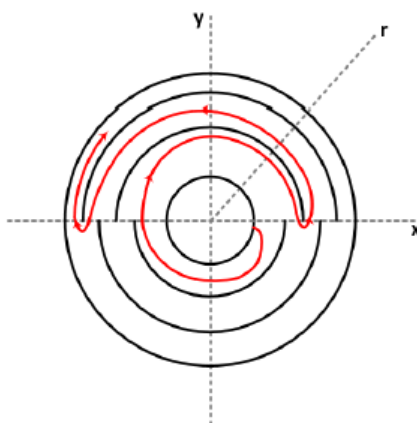


Figure 2

Ex. 1013, ¶128 (“In other words, the radially serpentine fluid pathway illustrated in FIG. 14 is a pathway that serpentine back (i.e., counterclockwise) and forth (i.e., clockwise) while advancing radially outward through a series of annular spaces that are connected and progressively larger. *See* Figure 2 below.”); Fig. 2; *see also* Ex. 2002 (Nixon Dep. at 24:24-26:9 (confirming his Figure 2 shows the pathway of the device in Figure 14 of the ’750 Patent)). At a minimum, this flow path provides one concrete example of a “radially serpentine” pathway.

For these reasons, Patent Owner respectfully disagrees with the Board’s statements in the preliminary decision regarding the Applicant’s statements during prosecution. ID at 14. Furthermore, a “flow *circumferentially* about the central chamber” is not inconsistent with the flow also being “radially serpentine.” What the Board appears to characterize as circumferential flow while traversing the length of a chamber in the context of the ’750 patent would be “helical” if there were no changes of direction, but “radially serpentine” when there is at least one change of direction, e.g. from clockwise to counter-clockwise.

With these clarifications noted above, Patent Owner agrees with the Board’s preliminary interpretation that “radially serpentine” means a back and forth flow around a radius of the off axis chamber and analyzes the art discussed herein with that understanding.

B. “at least one of” [axially serpentine and radially serpentine]

The phrase “at least one of” requires no construction, and the Board’s analysis of Petitioner’s arguments and *SuperGuide Corp. v. DirecTV Enters.*, 358 F.3d 870, 886 (Fed. Cir. 2004) in the preliminary decision was correct. ID at 14-15. This phrase simply requires that the claimed device must be “one or more of,” and is therefore either “axially serpentine” and/or “radially serpentine.” ID at 16.

C. “a common off axis chamber” / “a plurality of deflectors . . . configured to deflect the energy from the high energy material to the common off axis chamber

The Petition purports to explain the ordinary meaning of these two phrases based on a misreading of the prosecution history. Pet. at 13-14. These arguments do not appear to be addressed to any issue in this IPR and for at least that reason require no construction. *See Real Time Data*, 912 F.3d 1368 at 1375 (“The Board is required to construe ‘only those terms . . . that are in controversy, and only to the extent necessary to resolve the controversy.’”). Nevertheless, Patent Owner notes that it disagrees with Petitioner’s attempt to combine these phrases into one another and insert additional limitations (e.g., “separately and directly”). The language of the claims is clear and properly defines the scope of the inventions.

D. “fluid outlet”

Petitioner’s expert opines briefly on the ordinary meaning of the term “fluid outlet,” but the Petition does not mention or rely on this opinion and generally ignores this limitation of the claims. *See Ex. 1013*, ¶¶115-16. A proper

understanding of this term and its scope is important. Petitioner's expert asserts that "a fluid outlet" is simply "an orifice through which gas flows out of the common off axis chamber." This is overly broad. The claim language, specification, and prosecution history make clear that the claimed "fluid outlet" is an outlet for fluids to escape the off axis chamber and the device without returning to the central chamber.

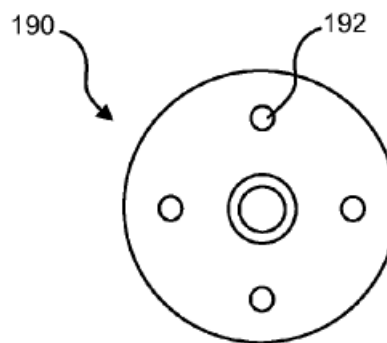
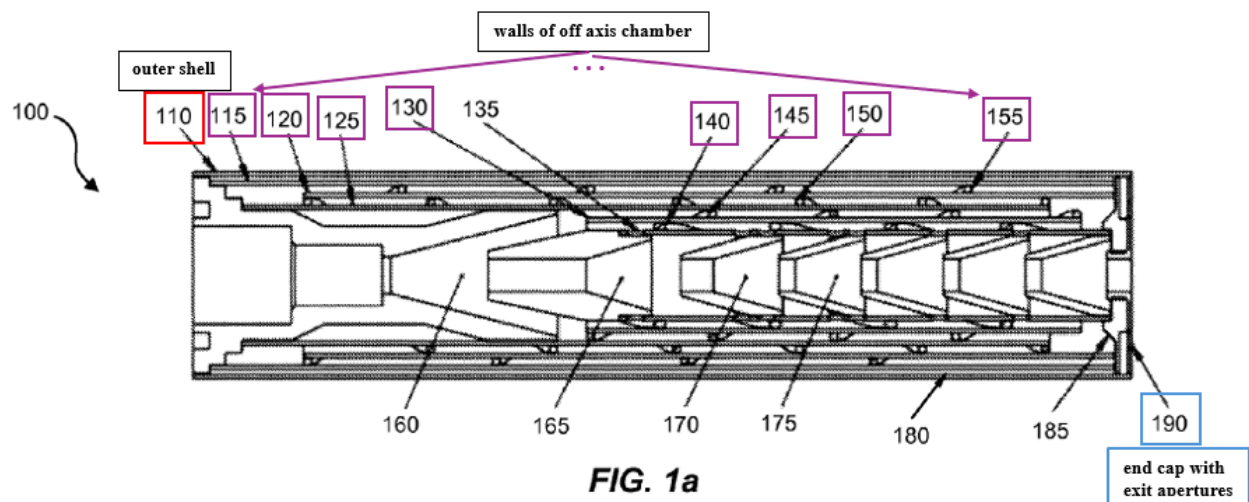
Beginning with the language of the claims, claim 1 sets out the structure of the device as follows:

1. An energy capture and control device, comprising:
 - a) a central chamber oriented along a central axis within an outer shell . . . ;
 - b) a common off axis chamber oriented within the outer shell in fluid communication with the central chamber *and* having a *fluid outlet*

Ex. 1001, Cl. 1 (emphasis added). The claimed device is described as including two chambers within an outer shell: a central chamber and common off axis chamber. The common off axis chamber is required to be both "in fluid communication with the central chamber" and must have a "fluid outlet." From the claim language alone, one of ordinary skill would understand the claimed "common off axis chamber" must, in addition to being in fluid communication with the central chamber, include an outlet for fluid to exit the chamber. In other

words, the “fluid outlet” must allow fluids to leave the claimed device’s off axis chamber, via a mechanism other than that which creates the fluid communication between the common off axis chamber and the central chamber.

The specification likewise provides that the “off axis chamber can be oriented within the outer shell in fluid communication with the central chamber” and “can have a fluid outlet.” Ex. 1001, 4:13-16. As shown in Figures 1 and 9, the specification shows an outlet at the end of the common off axis chamber with an end cap 190 and exit apertures 192:



Ex. 1001, 7:64; Figs. 1 (annotated), 9. The fluid can escape from the common off axis chamber without returning to the central chamber. Indeed, there is no embodiment in the specification in which the fluids necessarily return from the off axis chamber to the central chamber before leaving the device. Neitzel Decl. ¶70.

Finally, in the prosecution history, the Applicant further reinforced the meaning of the claimed “fluid outlet,” stating:

Furthermore, each of the independent claims requires that the off axis chamber includes “a fluid outlet.” This is a separate element from the fluid communication with the central chamber and presents an outlet for fluids to escape the off axis chamber and the device *without* returning to the central chamber. This allows fluids to escape from the device without creating excessive back pressure in the host weapon.

Ex. 1004, 054 (emphasis in original). These remarks were provided in the Applicant’s 5/29/12 Response, and the Examiner subsequently allowed the claims. *See* Ex. 1004, 035. This is a clear and unmistakable statement about the scope of the term “fluid outlet” that should control its interpretation. *See VirnetX Inc. v. Mangrove Partners Master Fund, Ltd.*, 778 F. App’x 897, 910 (Fed. Cir. 2019) (“Never have we authorized the Board to disregard clear and unmistakable statements of disclaimer from the prosecution history of a patent simply because it is the patent owner arguing for disclaimer. . . . The meaning of a claim term does not change depending on the party that argues prosecution disclaimer.”).

The claims, specification, and prosecution history thus all compel the conclusion that one of ordinary skill in the art would understand the “fluid outlet”

of claim 1 to require an outlet for fluids to escape the off axis chamber and the device without returning to the central chamber. Neitzel Decl. ¶73. Petitioner's expert makes a brief claim differentiation argument, asserting that issued claim 18 added this limitation. *See* Ex. 1013, ¶116. But this argument fails to recognize that claim 18 includes further narrowing limitations, including that the fluid outlet is provided "at an outlet end" of the central chamber. Ex. 1001, cl. 18; Neitzel Decl. ¶74. Moreover, it fails to recognize that the correct understanding of "fluid outlet" does not *preclude* fluids from returning to the central chamber like claim 18 does. *Id.* The "fluid outlet" must simply *allow* fluids to escape the off axis chamber without returning to the central chamber. Neitzel Decl. ¶75. Petitioner has no basis for reading the requirement of a "fluid outlet" out of the independent claims, and this limitation must be given effect.

IV. LEGAL STANDARDS

A. Anticipation

Grounds 1 and 5 addressed herein rely on anticipation. "[R]ejections under 35 U.S.C. § 102 are proper only when the claimed subject matter is identically disclosed or described in 'the prior art. . . .' The [prior art] reference must clearly and unequivocally disclose the claimed [invention] or direct those skilled in the art to the [invention] without any need for picking, choosing, and combining various disclosures not directly related to each other by the teachings of the cited

reference.” *In re Arkley*, 455 F.2d 586, 587 (C.C.P.A. 1972). Thus, “unless a reference discloses within the four corners of the document not only all of the limitations claimed but also all of the limitations arranged or combined in the same way as recited in the claim, it cannot be said to prove prior invention of the thing claimed and, thus, cannot anticipate under 35 U.S.C. § 102.” *Net MoneyIN, Inc. v. VeriSign, Inc.*, 545 F.3d 1359, 1371 (Fed. Cir. 2008).

“To serve as an anticipation when the reference is silent about the asserted inherent characteristic, such gap in the reference may be filled with recourse to extrinsic evidence. Such evidence must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill.” *Continental Can Co. USA, Inc. v. Monsanto Co.*, 948 F.2d 1264, 1268 (Fed. Cir. 1991) (citing *In re Oelrich*, 666 F.2d 578, 581 (C.C.P.A. 1981)). “Inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient.” *Id.* at 1268–69 (quoting *Hansgirk v. Kemmer*, 102 F.2d 212, 214 (C.C.P.A. 1939)).

B. Obviousness

The Petition relies on obviousness for the Grounds 2-4 and 6-8 addressed in this Response. Section 103 of the Patent Act provides that “[a] patent may not be obtained . . . if the differences between the subject matter sought to be patented and

the prior art are such that the subject matter *as a whole* would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.” 35 U.S.C. § 103(a) (emphasis added). If a single element of a claim is absent from the prior art, the claim cannot be considered obvious. *See CFMT, Inc. v. YieldUp Int’l Corp.*, 349 F.3d 1333, 1342 (Fed. Cir. 2003) (“[O]bviousness requires a suggestion of all limitations in a claim.”) (citing *In re Royka*, 490 F.2d 981, 985 (C.C.P.A. 1974)); *In re Rijckaert*, 9 F.3d 1531, 1534 (Fed. Cir. 1993) (reversing obviousness rejection where prior art did not teach or suggest all claim limitations); *Garmin Int’l, Inc. v. Patent of Cuozzo Speed Techs. LLC*, Case No. IPR2012-00001, Paper 15 at 15 (Jan. 9, 2013) (refusing to institute an IPR under 35 U.S.C. § 103 where prior art did not disclose all claim limitations).

The conclusion of obviousness based on a combination of references must be supported with explicit analysis of a reason to combine those references. *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 418 (2007). The Federal Circuit has stated that such reasons must be more than “mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.” *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006); *accord Innogenetics, N.V. v. Abbott Labs.*, 512 F.3d 1363, 1374 (Fed. Cir. 2008) (agreeing with the district court’s reasoning that “some kind of motivation must be shown from

some source, so that the jury can understand why a person of ordinary skill would have thought of either combining two or more references or modifying one to achieve the patented method”); *see also LG Elecs., Inc. v. Cellular Commc’ns Equip. LLC*, IPR2016-00197, Paper 7 at 7-11 (April 29, 2016) (faulting a petition’s obviousness analysis for lack of sufficient articulated reasons with rational underpinnings for modifying references to achieve particular elements required in the claims).

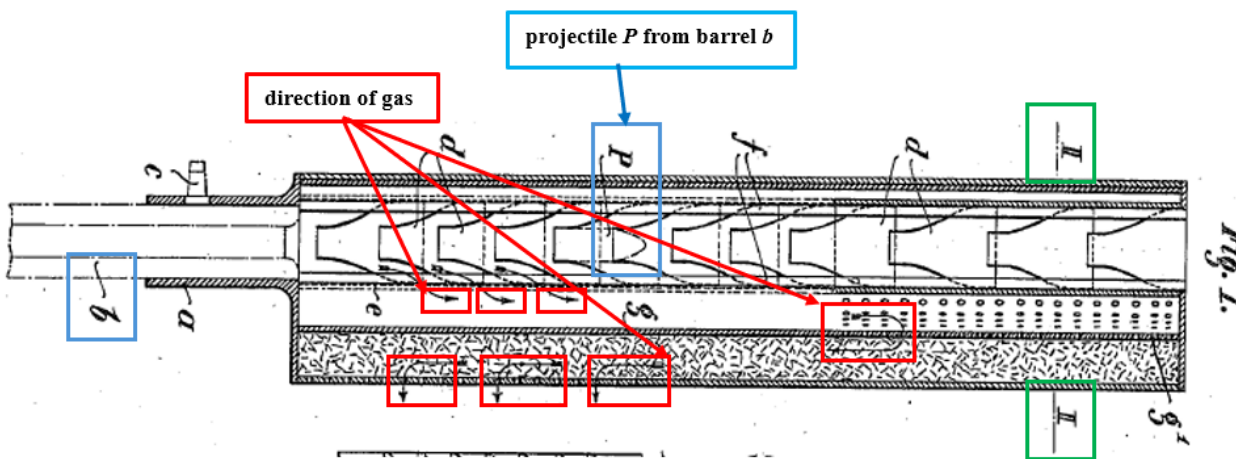
V. PRIOR ART REFERENCES

A. Thurler

Petitioner relies on U.S. Patent No. 1,000,702 to Thurler as the primary reference in Grounds 1-4. Pet. at 31. Thurler discloses “devices for lessening the report of firearms.” Ex. 1015, 2:9-10. Figures 1-4 disclose different perspectives of such a device. Ex. 1015, 1:40-45. Figure 1 is a “horizontal longitudinal section,” and Figure 2 is “a cross section along the line II—II” of Figure 1. Ex. 1015, 1:40-43.

The device includes sleeve *a* that fits over the barrel *b*. Ex. 1015, 1:47-49. The interior of the device has a tube *e* with a series of tubular sleeves *d*. Ex. 1015, 1:53-55. Tube *e* is made of a “fine net-work” for two-thirds its length with the remainder sheet metal. Ex. 1015, 1:55-58. Tube *g* surrounds tube *e* and is eccentric to the common axis. Ex. 1015, 1:69-73. Tube *g* is perforated for one-third its

length at the front. Ex. 1015, 1:73-75. Finally, a third tube *h* surround tube *g*, is likewise eccentric as shown, and perforated for one-third of its length at the rear, and the space between tubes *g* and *h* is filled with shavings of metal. Ex. 1015, 1:75-82. Tubes *g* and *h* are eccentric to the tubes through which the projectile travels such that they hang down below its trajectory “so that the sight *c* projects over the device.” Ex. 1015, 1:79-82.



EX1015, FIG. 1 (annotated)

Fig. 2.



EX1015, FIG. 2

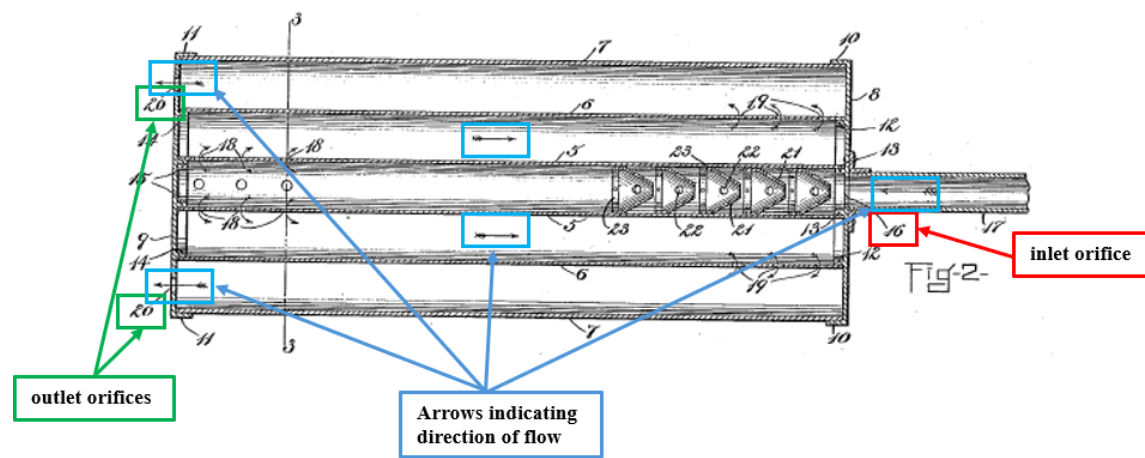
In Thurler, a projectile *P* fired from barrel *b* travels down a channel formed by the sleeves *d*. Ex. 1015, 1:84-87. The compressed gases pass through the openings of the tube *e* into the space between tubes *e* and *g*, then through the openings of tube *g* into the space between tubes *g* and *h* “where the gas is

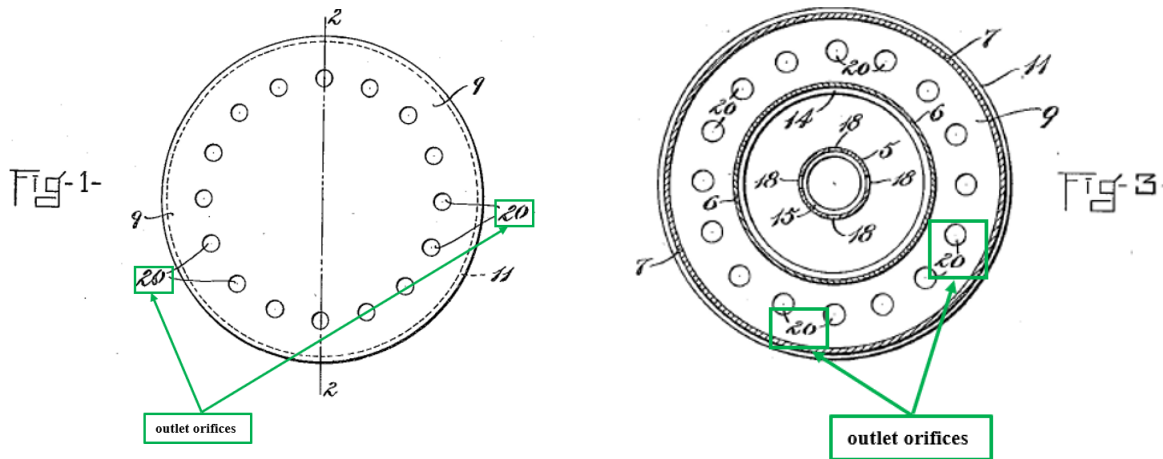
prevented from expanding instantly owing to the filling of the metal shavings.” Ex. 1015, 1:88-99. The direction of the compressed gas is shown by the arrows in the figure above. Ex. 1015, 1:83-84.

Thurler notes that “[e]xperiments have shown that the recoil of a gun fitted with the above described device is only very slightly diminished, the automatic reloading by recoil could therefore be accomplished.” Ex. 1015, 2:4-8.

B. Bouton

Petitioner relies on U.S. Patent No. 748,157 to Bouton as a secondary reference combined with Thurler in Ground 3. Pet. at 31. Bouton “relates to devices for muffling or deadening the sound of escaping vapors, such as exhaust-steam, gasolene vapors, and the like.” Ex. 1016, 1:8-11. Figure 1 shows an end elevation, Figure 2 is a longitudinal section taken on line 2 2 of Figure 1, and Figure 3 is a transverse section taken on line 3 3 of Figure 2. Ex. 1016, 1:38-44. The muffler includes an inlet 16 and outlet orifices 20. Ex. 1016, 1:61-71.



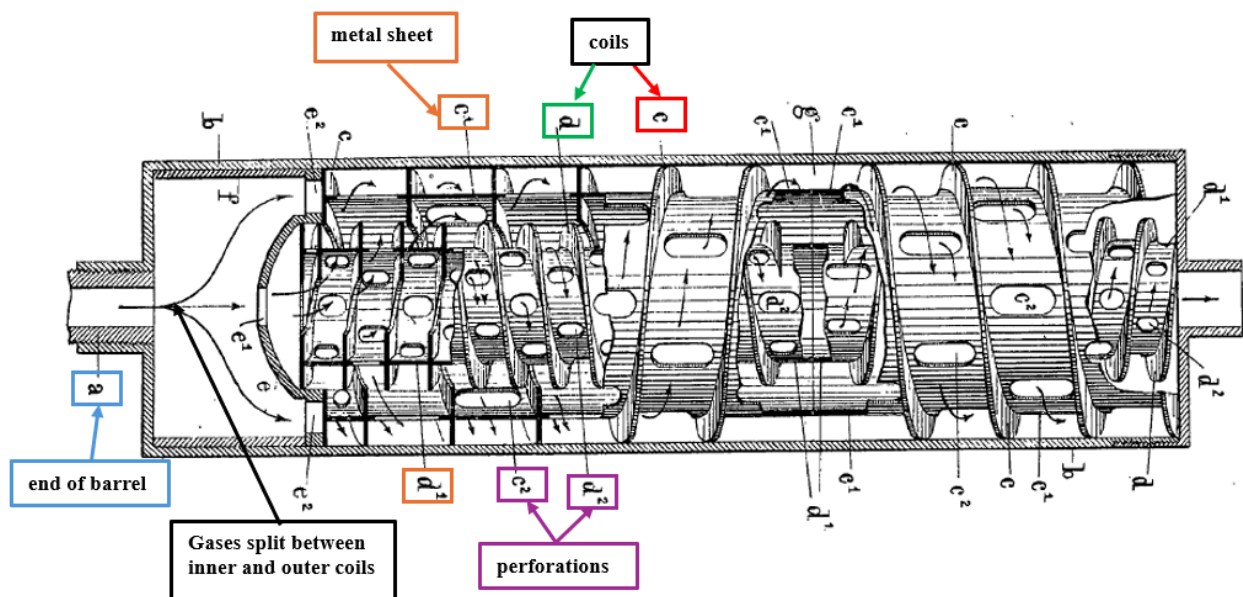


In operation, “[t]he exhaust gasolene vapor or steam” “enters the innermost tube 5 through . . . inlet-orifice 16” “travel[s] the entire length of the innermost tube 5, thence passing outwardly” and back and forth through the additional tubes “and outwardly through the orifices 20 20.” Ex. 1016, 1:82-99. Bouton explains that “the vapor finally passes out of the muffler through the orifices 20” such that “there is no perceptible sound caused thereby.” Ex. 1016, 2:2-5.

The annotated figures above indicate the direction of flow in Bouton’s muffler and demonstrate that the outlet orifices align between the end shown in Figure 1 and the section at 3 3 shown in Figure 3 such that all the vapor that passes through the muffler is expelled as would be appropriate to a muffler “especially adapted to be used in connection with gasolene engines and motor vehicles.” Ex. 1016, 2:9-13.

C. Barlowatz

Petitioner relies on French Patent No. 493,462 to Barlowatz as the primary reference in Grounds 5 and 6, as a secondary reference in Ground 4, and as a secondary reference in Ground 8. Pet. at 31. According to the translation provided by Petitioner, Barlowatz discloses a silencer “consisting of a sleeve” “enclosing two coils, nested one inside the other having turns oriented in different directions.” Ex. 1018 at 1. The silencer includes one external coil *c* and internal coil *d* whose turns are oriented in different directions:

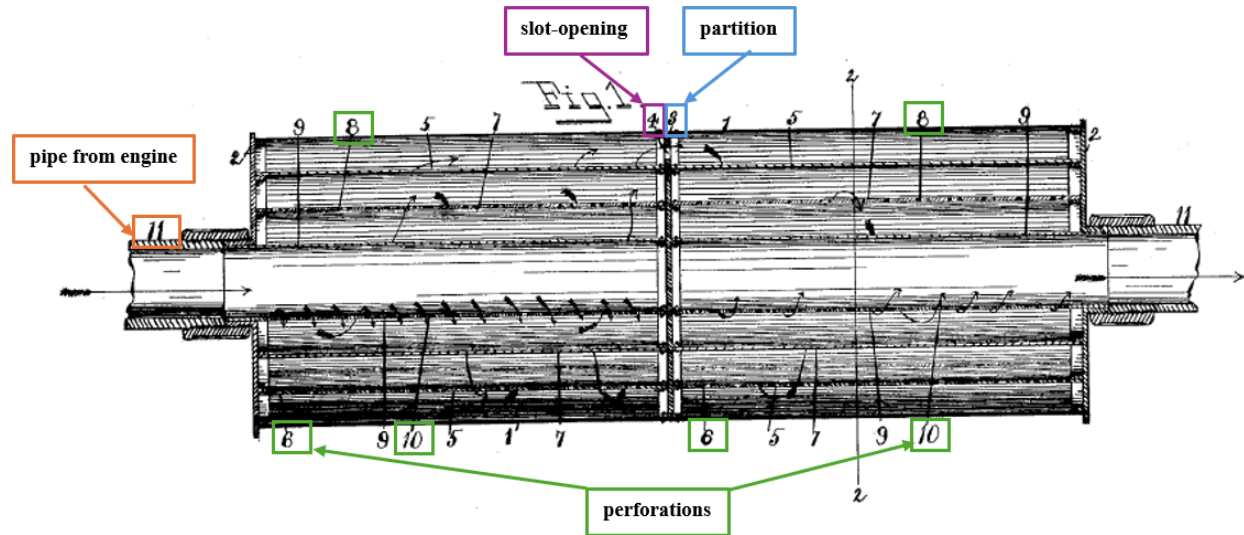


In operation, a projectile passes from the end of a gun barrel *a* through the inner coil *d*. Ex. 1018 at 1. The blast gases are split into two parts at part *e* with some of the gases following the projectile through inner coil *d* while most of the gases are diverted to outer coil *c*. Ex. 1018 at 1. The gases flow through the two coils in different directions and “counteract each other.” Ex. 1018 at 2. Barlowatz

further discloses that the groups of two coils can be mounted one after the other with two groups shown in the figure having two outer coils *c* oriented in opposite directions and two inner coils *d* oriented in different directions such that the gases in each are forced to change direction. Ex. 1018 at 2. The direction of the gases are indicated by the arrows in the drawing indicating how the split, drive in different directions in the two coils to counteract one another before coming together to exit from the open end of the inner coil as shown. Ex. 1018 at 2.

D. Reeves

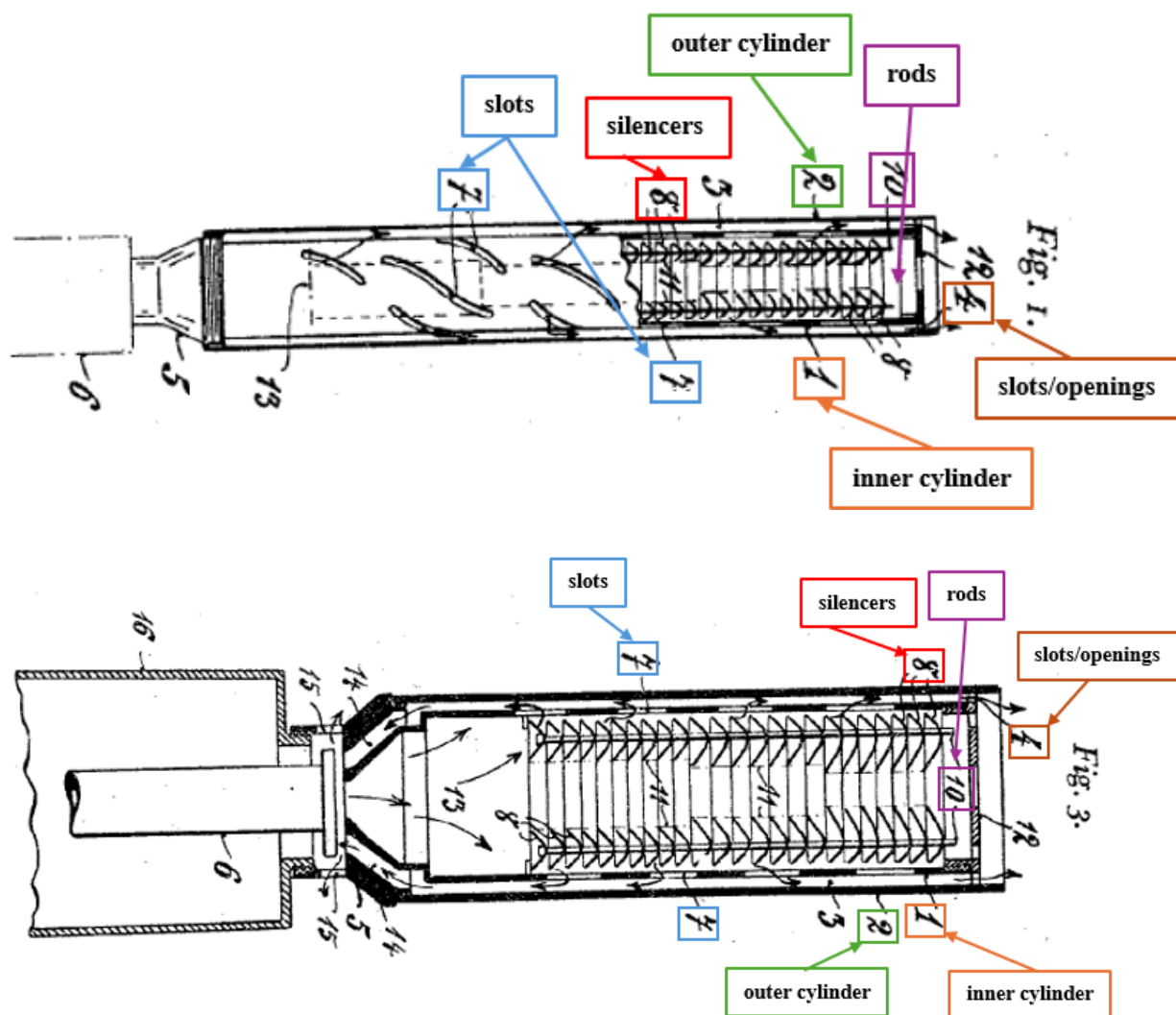
Petitioner relies on U.S. Patent 582,485 to Reeves as a secondary reference in Ground 7. Pet. at 31. Reeves discloses an “Exhaust-Muffler” designed “to provide means for expanding exhaust product gradually, and in so doing to break it up and cool it to such an extent that when it is finally exhausted into the atmosphere its pressure and temperature are practically normal.” Ex. 1019, 1:21-26. Reeves discloses “a central vertical section” of such a device in Fig. 1:



Ex. 1019, 1:32-33; Fig. 1 (annotated). The device includes an outer shell 1, concentric shells 5, 7, and 9, partitioned at 3 with a slot-opening 4, and perforations labelled 6, 8, and 10. Ex. 1019, 1:35-70. Pipe 11 is connected to the exhaust of an engine and “gas or liquid entering the small chamber at one end must, before being expelled at the other end, pass through 180° in each annular chamber between the shells.” Ex. 1019, 1:55-59. In more detail, the gases from pipe 11 pass into the smaller chamber, then through perforations 10 to the chamber between shells 9 and 7, then through perforations 6 into the chamber between shells 5 and through opening 4 into the right-hand side. Ex. 1019, 1:59-70. The gases then reverse from the larger chambers to smaller through the same numerated perforations until it is “finally exhausted from the smaller chamber,” i.e. out at reference number 11 as indicated by the arrow. Ex. 1019, 1:70-74.

E. Eichenseher

Petitioner relies on German Patent No. 305, 012 to Eichenseher as the primary reference in Ground 8. Pet. at 31. According to the translation provided by Petitioner, Eichenseher discloses a silencer for rifles in Figures 1 and 2, and a silencer for a machine gun in Figure 3:



Ex. 1021, Figs. 1 and 3 (annotated). Both silencers include inner cylinder 1 and outer cylinder 2, creating a cavity 3 between. Ex. 1021 at 1. The inner cylinder

includes slots 7 that permit gas to escape into cavity 3. Ex. 1021 at 1. The inner cylinder 1 includes silencers 8 (also translated as “sound absorbers 8”), shown with notches 9 in Figure 4, that are loosely lined up on rods 10. Ex. 1021 at 1-2. In operation, Eichenseher asserts that sound is intercepted by the sound absorbers 8 while gases can escape through 9, 7, 3, and 4. Ex. 1021 at 2.

VI. PETITIONER HAS FAILED TO SHOW THAT CLAIMS 2, 3, 6, 9, 12-14, 18, OR 20 ARE ANTICIPATED OR RENDERED OBVIOUS OVER THE ASSERTED GROUNDS.

Claims 2, 3, 6, 9, 12-14, 18, and 20 should be found patentable over the Petitioner’s asserted grounds. For the anticipation grounds, the cited art fails to disclose at least one limitation of the claims addressed herein. For the remaining obviousness grounds, Petitioner fails to articulate an adequate motivation for one of ordinary skill in the art to modify and combine the disparate structures of the cited art, all extraordinarily old references, to achieve HuxWrx’s claimed inventions. *See Leo Pharm. Prods. v. Rea*, 726 F.3d 1346, 1356 (Fed. Cir. 2013) (“The elapsed time between the prior art and the ’013 patent’s filing date evinces that the ’013 patent’s claimed invention was not obvious to try. Indeed this considerable time lapse suggests instead that the Board only traverses the obstacles to this inventive enterprise with a resort to hindsight”). Petitioner’s arguments in the grounds addressed below evince nothing more than improper hindsight bias to cobble together structure with knowledge of the ’750 Patent’s inventions. These

arguments should be rejected, and these claims found patentable as discussed below. *See, e.g., Ecolochem, Inc. v. S. Cal. Edison Co.*, 227 F.3d 1361, 1374-75 (Fed. Cir. 2000) (discussing lack of motivation and the need for “particular findings . . . as to the reason the skilled artisan, with no knowledge of the claimed invention, would have selected these components for combination in the manner claimed.”).

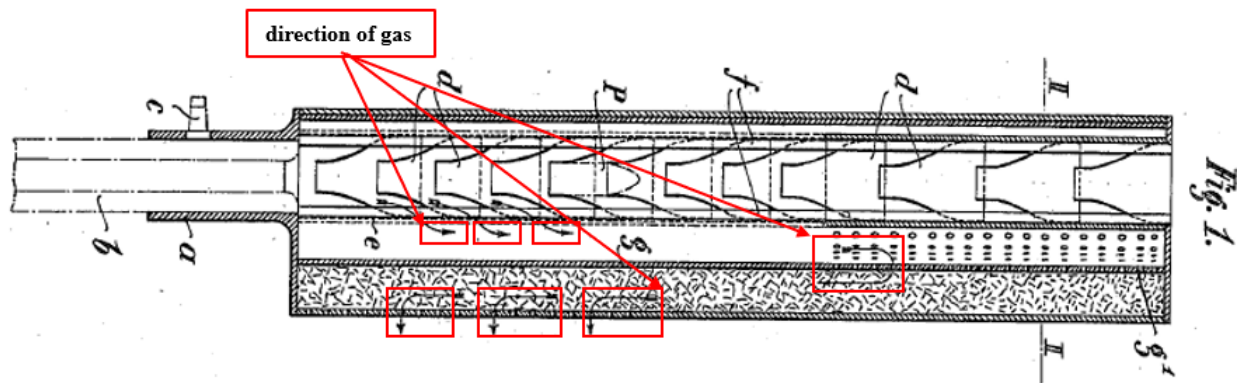
A. Ground 1: Thurler Cannot Anticipate Claim 9 Because It Does Not Disclose a “Radially Serpentine” Pathway.

Claim 9³ is patentable over Ground 1 because Thurler, the only reference at issue for this Ground, fails to disclose its limitations. Claim 9 requires that “the multiple internal walls are formed to produce a radially serpentine fluid pathway.” Ex. 1001, cl.9. Petitioner and its expert conclusorily assert that Thurler’s tubes somehow create a radially serpentine pathway, but they point to no evidence that Thurler actually discloses a radially serpentine fluid pathway. *See* Pet. at 35-36; Ex. 1013, ¶¶176-77. And for good reason, as Thurler only discloses an *axially* serpentine fluid pathway.

As explained above in Section III.A, “radially serpentine” means a back and forth flow around a radius of the off axis chamber. Thurler does not disclose walls

³ Ground 1 applies to claims 1, 4, 5, 7-9, 15-17, 19, and 22. However, Patent Owner is seeking to non-contingently amend claims 1, 4, 5, 7-8, 15-17, 19, and 22. Patent Owner thus limits its Response on this Ground to claim 9.

that produce a radially serpentine pathway. Figure 1 of Thurler illustrates the path that gases take with arrows, highlighted in red below:



EX1015, FIG. 1 (annotated)

See also Ex. 1015, 1:83-84. As the arrows show, fluid flows down the length of the chambers and back, which is an axially serpentine pathway. But there is no structure to cause a change of direction around a radius of the chamber. Neitzel Decl. ¶104; *see also* Ex. 2002 (Nixon Dep.) at 31:8-36:1. Petitioner’s expert agrees—when asked at his deposition whether he would describe this pathway as “radially serpentine or axially serpentine or both,” he stated “[t]hat [it] would be axially serpentine.” Ex. 2002 (Nixon Dep.) at 35:20-36:1. Petitioner has thus failed to demonstrate that Thurler discloses any structure that satisfies the requirements of claim 9.

B. Ground 2: Thurler Does Not Render Claims 6 or 9 Obvious.

Claims 6 and 9⁴ are patentable over Ground 2 because Thurler, the only reference at issue for this Ground, fails to render obvious their limitations.

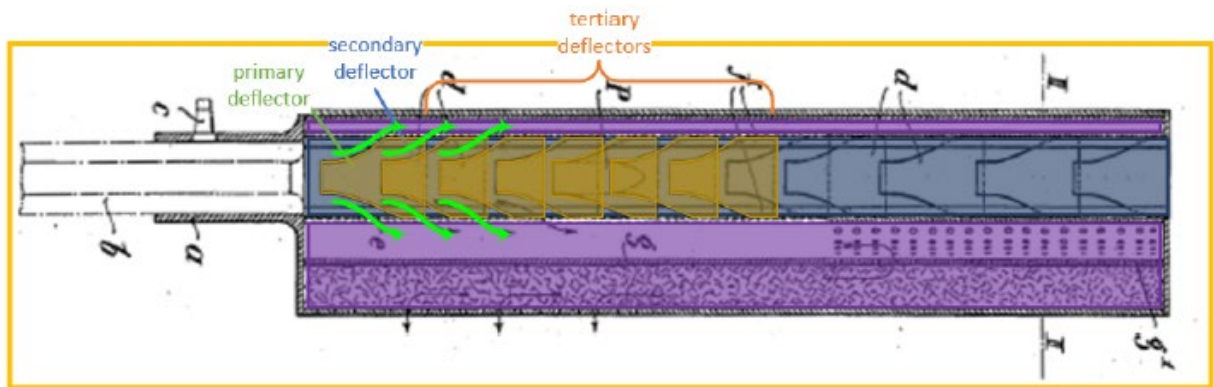
1. Claim 6

Claim 6 requires that “the fluid communication between the common off axis chamber and the central chamber occurs *only* at the primary deflector, the secondary deflector and a first tertiary deflector.” Ex. 1001, cl. 6 (emphasis added). Petitioner admits that Thurler does not disclose this limitation. *See* Pet. at 48; *see also id.* at 31 (excluding cl.6 from Ground 1 based on § 102). Petitioner instead asserts that it would be obvious to modify Thurler to meet this limitation. Pet. at 48.

Petitioner, however, has failed to show that a person of ordinary skill in the art would modify Thurler in a way that would achieve the limitations of claim 6. Petitioner provides the annotated figure below and argues that, because Thurler discloses that tube *e* “is perforated for two thirds of its length,” it also “contemplates other lengths of perforations but opted to use a perforation

⁴ Ground 2 applies to claims 1, 4-11, 15-17, 19, 21, and 22. However, Patent Owner is seeking to non-contingently amend claims 1, 4-5, 7-8, 10-11, 15-17, 19, 21, and 22. Patent Owner thus limits its Response on this Ground to claims 6 and 9.

configuration that extends two thirds of the length.” Pet. at 48 Thus, Petitioner concludes, “Thurler at least teaches or suggests shorter and longer perforation configurations for tube *e*, including a shorter perforation configuration that limits fluid communication between the central chamber and common off-axis chamber of Thurler to the first three sleeves.” *Id.* at 48-49.



EX1015, FIG. 1 (Petitioner-annotated)

Pet. at 48; Ex. 1013, ¶212.

There are two problems with Petitioner’s argument. First, Petitioner has not actually pointed to anything that suggests a shorter or longer perforation configuration. That Thurler discloses that tube *e* is perforated for two thirds of its length does not teach or suggest that any other configuration would be appropriate. Neitzel Decl. ¶¶109-10.

Second, Thurler does not disclose or suggest any particular connection between the sleeves *d*, which Petitioner points to as deflectors, and the length of perforations. Claim 6 requires that fluid communication occur only at the primary, secondary, and first tertiary deflectors. But Thurler does not suggest limiting the

fluid communication between the central and off axis chambers at any of the purported deflectors. Instead, Thurler discloses that sleeves *d* extend the full length of tube *e*, with a “fine net-work” (described as “perforations” in its claim) spanning two-thirds of tube *e* where it is surrounded by tube *g*. Ex. 1015, 1:53-55, 1:69-74, 2:28-30; Fig. 1. Thus, even if one were to accept Petitioner’s contention that the length of perforations in tube *e* could be varied, it does not follow that a POSITA would limit the fluid communication to any particular subset of the sleeves *d*. *See* Neitzel Decl. ¶¶111-121. Petitioner has accordingly failed to demonstrate that the limitations of claim 6 would be obvious, and its assertion reflects only hindsight bias.

2. Claim 9

As set forth above in Section VI.A, Thurler does not disclose any structure to “produce a radially serpentine fluid pathway” as required by Claim 9. Petitioner asserts, with no argument, that “[t]o the extent PO argues that Thurler fails to disclose any limitations of [Claim 9], Thurler renders obvious any such limitations.” Pet. at 46; *see also* Ex. 1013, ¶¶206-07. This conclusory assertion is insufficient to meet Petitioner’s burden. *See, e.g., TQ Delta, LLC v. Cisco Sys.*, 942 F.3d 1352, 1361 (Fed. Cir. 2019) (summarizing cases where Fed. Cir. has repeatedly “rejected obviousness determinations based on conclusory and unsupported expert testimony”).

Moreover, there is no indication that a POSITA would modify Thurler to introduce a radially serpentine fluid pathway. Thurler’s solution for “lessening the report of fire-arms” and “destroying” “the gases of combustion” is to add more chambers of the same design as its Figure 1 to lengthen the fluid pathway. *See* Ex. 1015, 1:9-19; 1:27-30 (“The inner casing is further inclosed [sic] in *one or more* mantles which are alternately perforated at the front or at the rear end”) (emphasis added). As discussed above, these chambers create an axially serpentine fluid pathway. *See* Pet. at 34; Ex. 1013, ¶174. Thurler’s disclosure thus teaches adding length to the axially serpentine pathway, not introducing an additional direction for fluid to flow (such as a radially serpentine pathway). Neitzel Decl. ¶¶115-16. Petitioner’s assertion that one of ordinary skill would seek to incorporate a radially serpentine pathway into Thurler’s design reflects only hindsight bias from Patent Owner’s invention.

C. Ground 3: Thurler in View of Bouton Does Not Render Claim 18 Obvious.

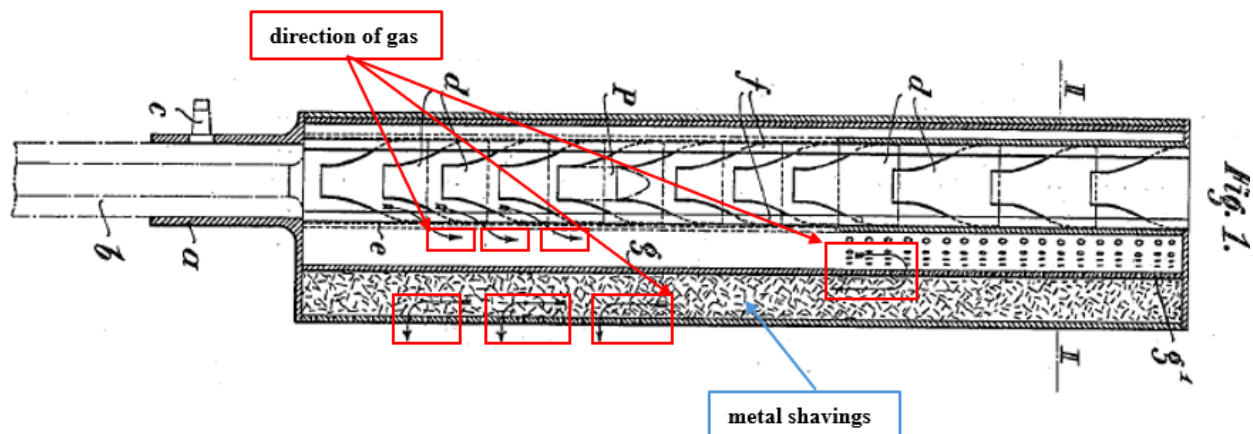
Claim 18⁵ requires:

18. The device of claim 1, wherein the outer shell includes an end cap assembly at an outlet end of the central chamber and which allows fluid to escape from the common off axis chamber through the fluid

⁵ Claim 18 is the only claim at issue for Ground 3.

outlet, the fluid outlet being only accessible to the fluid in the common off axis chamber.

Ex. 1001, cl.18. Petitioner asserts that it would be obvious to modify Thurler's suppressor in view of the muffler of Bouton in order to achieve claim 18's requirements. But Petitioner cannot justify modifying Thurler such that the claimed "fluid outlet" is located "at an outlet end of the central chamber and which allows fluid to escape from the common off axis chamber." *See* Pet. at 54-55; *see also* Ex. 1013, ¶¶226-31. Thurler's design provides that the pathway of the gas is directed downward into metal shavings to prevent the gas from "expanding instantly":



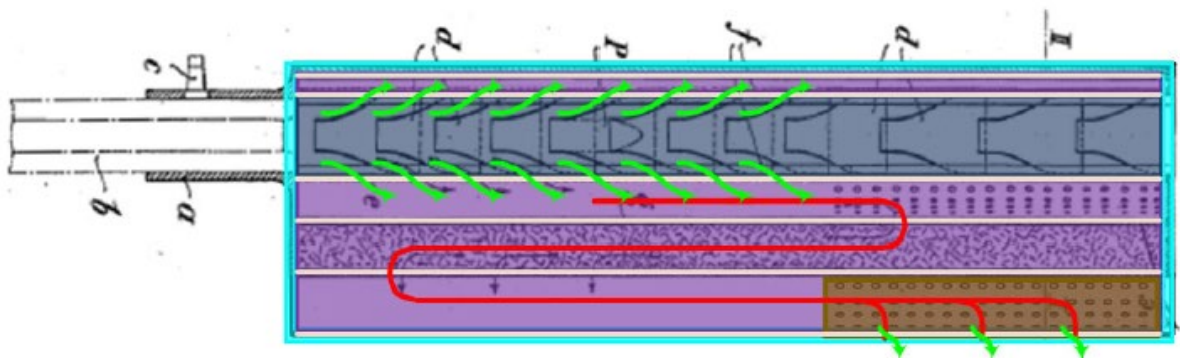
EX1015, FIG. 1 (annotated)

Ex. 1015, 1:77-78; 1:94-95. And, as shown in the annotated figure above, the gases exit the off-axis chamber at the bottom of the device and near the inlet, not at an outlet end of the central chamber

Thurler offers no reason to change this arrangement of its fluid outlet.

Petitioner and its expert argue that a POSITA would add an additional tube from

Bouton “to improve noise suppression by increasing a path length and expansion area for the deflected energy” and thus arrive at the ’750 Patent’s invention in claim 18. *See* Pet. at 55; *see also* Ex. 1013, ¶¶229. But this ignores the fact that Thurler’s solution for “lessening the report of fire-arms” and “destroying” “the gases of combustion” is to add more chambers of the *same* design, eccentric and hanging below the path of the barrel and sight, to lengthen its pathway. *See* Ex. 1015, 1:9-19; *see also* Neitzel Decl. ¶¶121-22. Petitioner illustrates Thurler’s contemplated modifications with the below figure, which it provides in support of its arguments for an “axially serpentine” pathway:



(Petitioner-modified ESD_1 of Thurler)

Pet. at 34; Ex. 1013, ¶174. Thus, as Petitioner concedes, the modifications contemplated by Thurler maintain the *downward* direction of the fluid outlet.

Petitioner’s assertion that one of ordinary skill would further add the outermost tube from Bouton’s muffler finds no motivation in either reference. Neitzel Delc. ¶123. And doing so would potentially undermine the benefits of

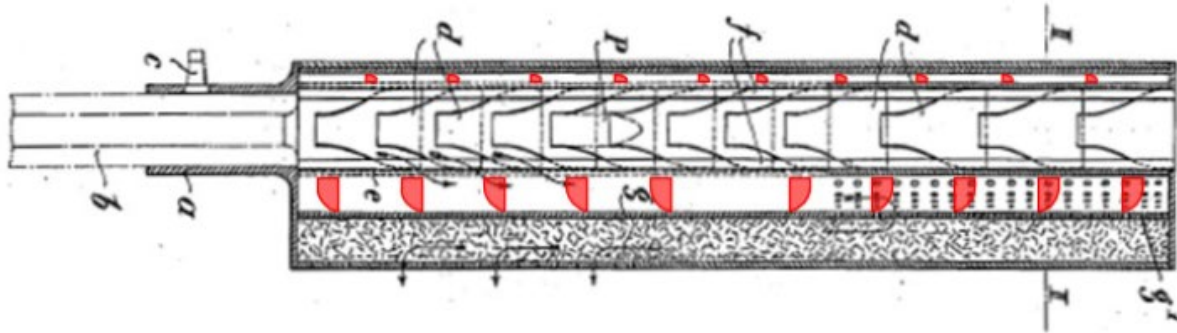
Thurler. Thurler itself notes that experimental results confirm its device does not interfere with automatic reloading or obstruct the sight *c* that projects over the device. Ex. 1015, 1:79-82; 2:4-8. A fundamental design change such as moving the location and direction of the fluid outlet as Petitioner proposes could not be expected to maintain these conditions. Neitzel Decl., ¶123. Indeed, as Figure 2 of Bouton shows, adding the outermost tube from Bouton’s muffler to Thurler would cause the device to obstruct Thurler’s sight *c*, which Thurler explicitly avoids. *See* Ex. 1016, Fig. 2; *see also* Neitzel Decl. ¶124. Petitioner has thus failed to show that a POSITA would be motivated to combine and modify the different structures of Thurler and Bouton to achieve the invention of claim 18, and Ground 3 reflects only hindsight bias from Patent Owner’s invention.

D. Ground 4: Thurler in View of Barlowatz Does Not Render Claim 6, 9, 12, 13, 14, or 20 Obvious.

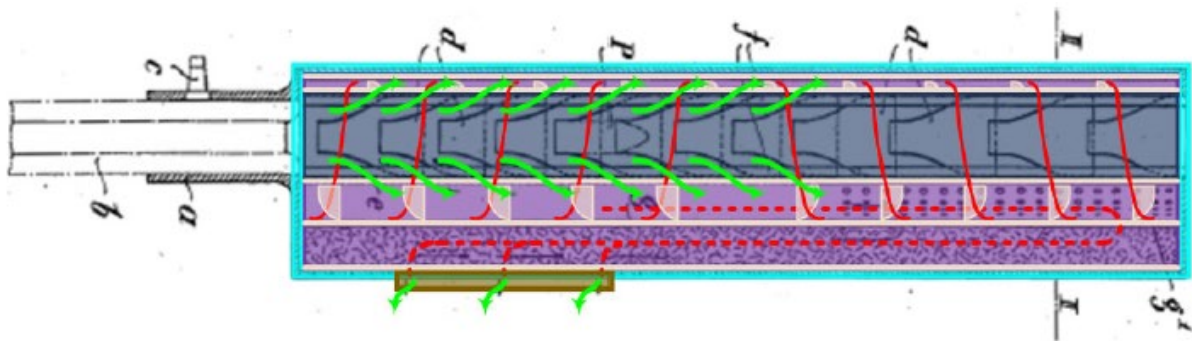
Claims 6, 9, 12, 13, 14, and 20⁶ are patentable over Ground 4 because of the fundamental incompatibility of the proposed combination of the structures from Thurler and Barlowatz. Petitioner and its expert propose “modify[ing] Thurler’s ESD to include one or more helical coils (*e.g.*, Barlowatz’s inner coil *d*) in one or

⁶ Ground 4 applies to claims 1, 4-17, and 19-22. However, Patent Owner is seeking to non-contingently amend claims 1, 4-5, 7-8, 10-11, 15-17, and 19-22. Patent Owner thus limits its Response on this Ground to claims 6, 9, 12, 13, 14, and 20.

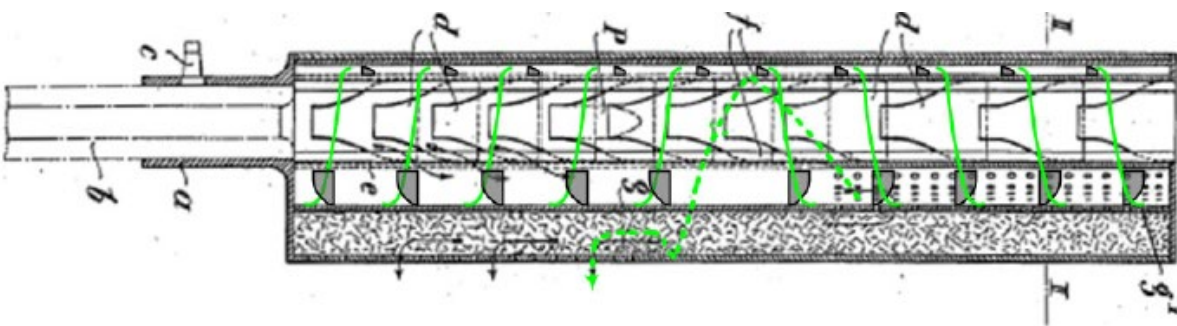
more exterior tubes (e.g., Thurler's tube g).'' Pet. at 59. Petitioner and its expert provide drawings of its proposed combination as follows:



EX1013, Figure 7 (Thurler's modified ESD_3 with modifications in red)



***Id.*, Figure 8 (mapping to Thurler's modified ESD_3)**

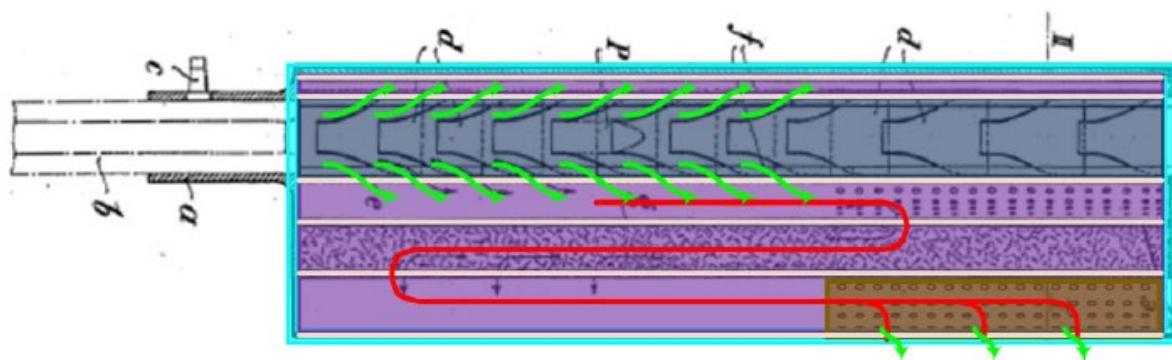


***Id.*, Figure 9 (radially serpentine fluid flow in Thurler's modified ESD_3)**

Pet. at 59-60; *see also* Ex. 1013, ¶¶240-42. As shown, Petitioner proposes inserting one of Barlowatz's coils in tube g of Thurler. Petitioner argues that the motivation

for combining these disparate structures from the two references would be “to improve noise suppression by increasing a path length for the fluid flow and further slowing the speed of the fluid flow.” Pet at. 101-02.

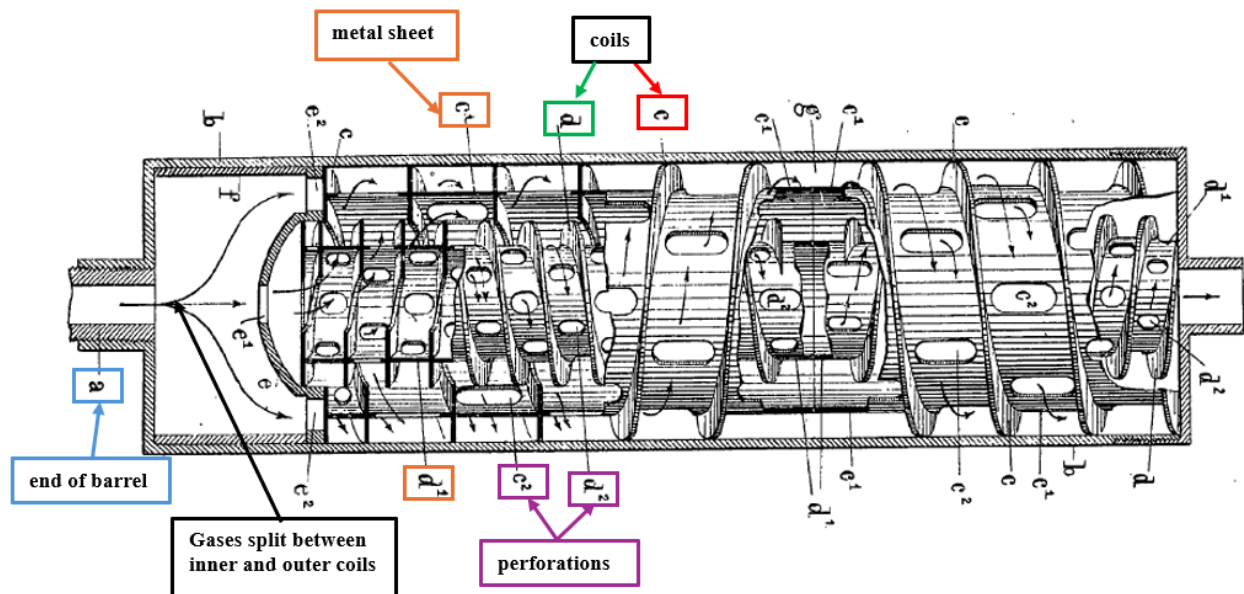
Petitioner’s proposed combination of Thurler and Barlowatz fails for at least two reasons. First, Thurler teaches a different approach to lengthening the fluid pathway, as addressed above in Section VI.B.2. In brief, Thurler teaches adding additional eccentric chambers as shown in Petitioner’s annotated figure below:



(Petitioner-modified ESD_1 of Thurler)

See Pet. at 34; Ex. 1013, ¶174. There is nothing in Thurler that would suggest to a POSITA to seek to add the coils of Barlowatz to lengthen a fluid pathway in different directions. Neitzel Decl. ¶¶128-29.

Second, Barlowatz discloses a fundamentally different design for providing a fluid pathway in a silencer, relying on two coils oriented in different directions. See *supra* Section.V.C. Barlowatz discloses a silencer “consisting of a sleeve” “enclosing two coils, nested one inside the other having turns oriented in different directions.” Ex. 1018 at 1.



Ex. 1018 at 1, 4 (figure annotated). Barlowatz provides that the blast gases are split into two parts at part *e* with some of the gases following the projectile through inner coil *d* while most of the gases are diverted to outer coil *c*. Ex. 1018 at 1. The point is for the gases to flow through the two coils in different directions and “counteract each other.” Ex. 1018 at 2. Inserting *one* of the coils of Barlowatz into Thurler would defeat the stated function of Barlowatz’s structure to allow the gases to split and counteract one another. Neitzel Decl. ¶¶130-31. Furthermore, Petitioner elsewhere asserts that the “first two interior turns of Barlowawtz’s inner coil *d*” provide a “plurality of deflectors.” See Pet. at 67; Ex. 1013, ¶260. Petitioner does not even address how to account for these alleged deflectors in conjunction with Thurler’s sleeves *d*. Neitzel Decl. ¶132.

Inserting *both* of Barlowatz’s coils into Thurler (which Petitioner has not shown or clearly advocated) likewise would defeat Thurler’s operation. Neitzel Decl. ¶133. The gases flowing in different directions would counteract, if not prevent, the desired flow along the chambers to the perforations of Thurler to achieve Thurler’s purpose of directing gases towards the metal shavings and out the bottom. Neitzel Decl. ¶133.

In light of these fundamental incompatibilities between the two references, Petitioner has failed to show that a POSITA would be motivated to combine and modify the different structures of Thurler and Barlowatz to achieve the claimed inventions, and Ground 4 reflects only hindsight bias from Patent Owner’s invention.

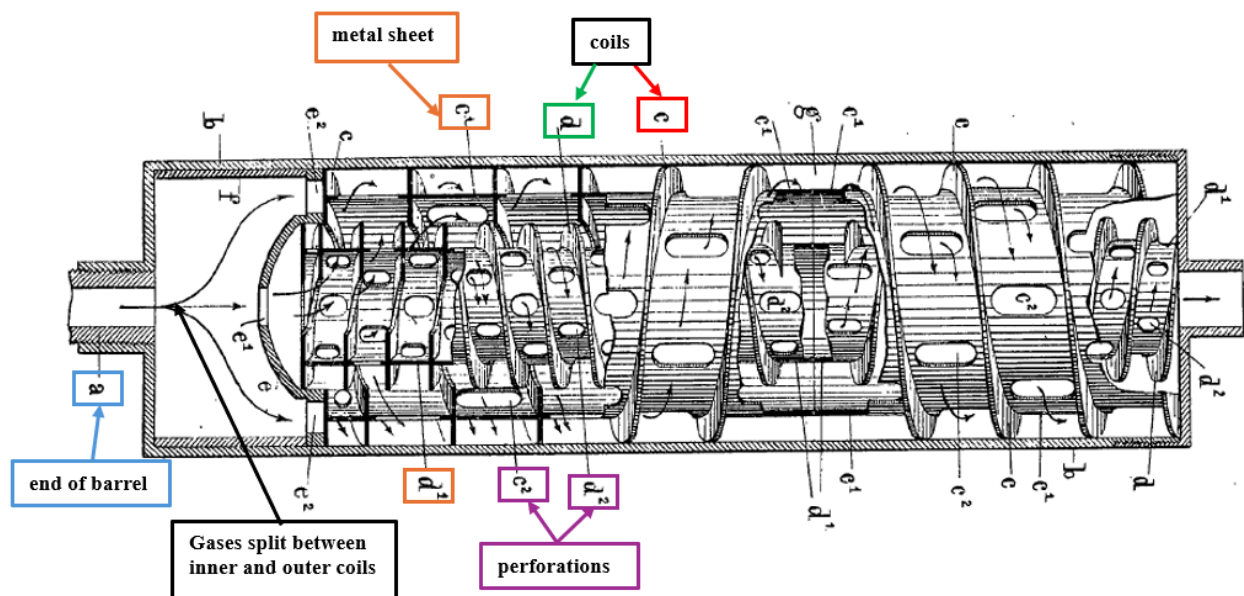
E. Ground 5: Barlowatz Does Not Anticipate Claim 9 or 20.

Claims 9 and 20⁷ are patentable over Ground 5 because Barlowatz, the only reference at issue for this Ground, fails to disclose at least two claim limitations. Barlowatz does not disclose either of (1) “a fluid outlet” from the common off axis chamber; or (2) “a plurality of deflectors oriented in series along the central axis of

⁷ Ground 5 applies to claims 1, 9, 19, and 20. However, Patent Owner seeking to is non-contingently amend claims 1 and 19. Patent Owner thus limits its Response to claims 9 and 20.

the central chamber” as required by the independent claims from which claims 9 and 20 depend.

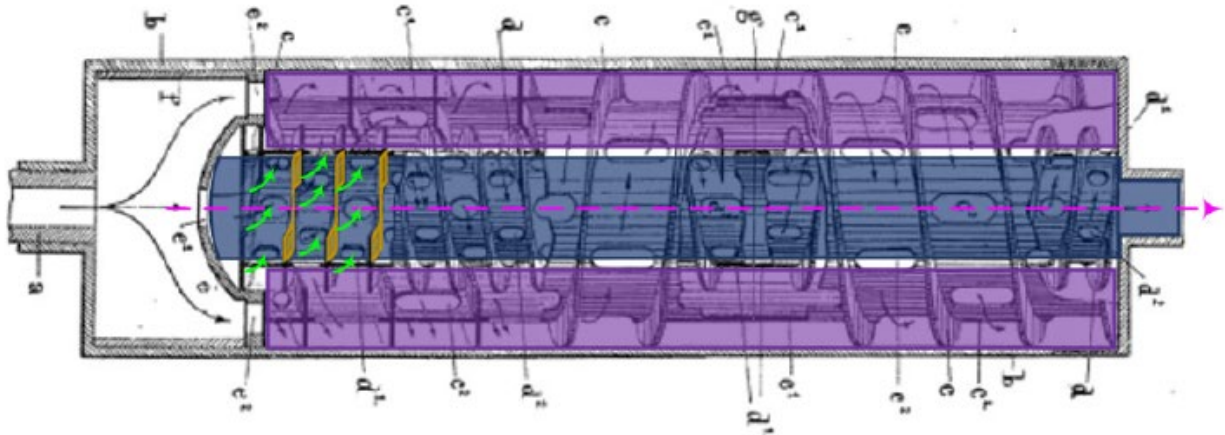
First, as set forth above in Section III.D, the claimed “fluid outlet” of the common off axis chamber is an outlet for fluids to escape the off axis chamber and the device without returning to the central chamber. Barlowatz does not disclose any such fluid outlet. As explained above in Section V.C, Barlowatz discloses a silencer “consisting of a sleeve” “enclosing two coils, nested one inside the other having turns oriented in different directions.” Ex. 1018 at 1.



Ex. 1018 at 1, 4 (figure annotated). The blast gases are split into two parts at part *e*, with some of the gases following the projectile through inner coil *d* while most of the gases are diverted to outer coil *c*. Ex. 1018 at 1. The goal of Barlowatz is for the gases to flow through the two coils in different directions and “counteract each other.” Ex. 1018 at 2. The arrows in Barlowatz’s figure indicate the flow of the

gases, and as shown, the gases come together and exit from the central chamber, not the common off axis chamber. Neither Petitioner nor its expert address the lack of a fluid outlet from the common off axis chamber. *See* Pet. at 64-67; Ex. 1013, ¶¶255-59. And at his deposition, Petitioner’s expert confirmed that the gases come together back to the inner coil, which is the only part he would identify as a fluid outlet. Ex. 2002 (Nixon Dep.) at 53:10-24. Thus, Barlowatz fails to disclose a “fluid outlet” as claimed in the ’750 Patent. It accordingly cannot anticipate claims 9 and 20.

Second, Barlowatz fails to disclose “a plurality of deflectors oriented in series along the central axis of the central chamber.” It is well settled in patent law that a “plurality” generally means “at least two.” *See, e.g., Resqnet.com, Inc. v. Lansa, Inc.*, 346 F.3d 1374, 1382 (Fed. Cir. 2003). To satisfy this limitation, Petitioner identifies “the first two interior turns of Barlowatz’s inner coil *d*,” as shown in the beige color in Petitioner’s annotated figure from Barlowatz:



EX1018, FIG. 1 (Petitioner-annotated)

Pet. at 67; *see also* Ex. 1013, ¶260. But, to the extent a coil is a deflector at all, these “turns” fail to disclose a *plurality* of deflectors as they are part of a single, continuous “helically wound metal strip.” *See* Ex. 1018, 1; *see also* Neitzel Decl. ¶¶140-41. For this additional reason, Barlowatz cannot anticipate claims 9 and 20.

F. Ground 6: Barlowatz Does Not Render Claim 9 or 20 Obvious.

Claims 9 and 20⁸ are also patentable over Ground 6 because Barlowatz, the only reference at issue for this Ground, fails to render obvious (1) “a fluid outlet” from the common off axis chamber, and (2) “a plurality of deflectors oriented in series along the central axis of the central chamber.” As explained in connection with Ground 5, Barlowatz fails to disclose these limitations. *See* Section VI.E. For Ground 6, Petitioner offers nothing but conclusory assertions that “a POSITA

⁸ Ground 6 applies to claims 1, 9, 19, and 20. However, Patent Owner is seeking to non-contingently amend claims 1 and 19. Patent Owner thus limits its Response to claims 9 and 20.

would have been motivated, and it would have been obvious to a POSITA, to modify Barlowatz's ESD to include fewer or additional coils, perforations, or deflectors (e.g., by increasing or decreasing the winding of the coils), and the like." Pet. at 70. This conclusory assertion is insufficient to meet Petitioner's burden. *See, e.g., TQ Delta*, 942 F.3d at 1361 (summarizing cases where Fed. Cir. has repeatedly "rejected obviousness determinations based on conclusory and unsupported expert testimony").

Moreover, providing "a fluid outlet" from the common off axis chamber in Barlowatz would undermine its purpose. Requiring the fluids in the alleged off axis chamber to exit from the central chamber is an important aspect of Barlowatz's design because, as discussed above, the gases in Barlowatz flow through the two coils in different directions and "counteract each other." Ex. 1018 at 2. If Barlowatz were modified such that the gases exited from the alleged off axis chamber, they would not reconnect in the central chamber and counteract one another, undermining the very purpose of Barlowatz's design. Thus, a POSITA would not be motivated to modify Barlowatz to implement a fluid outlet for fluids to escape the off axis chamber and the device without returning to the central chamber. *See* Neitzel Decl. ¶¶144-45.

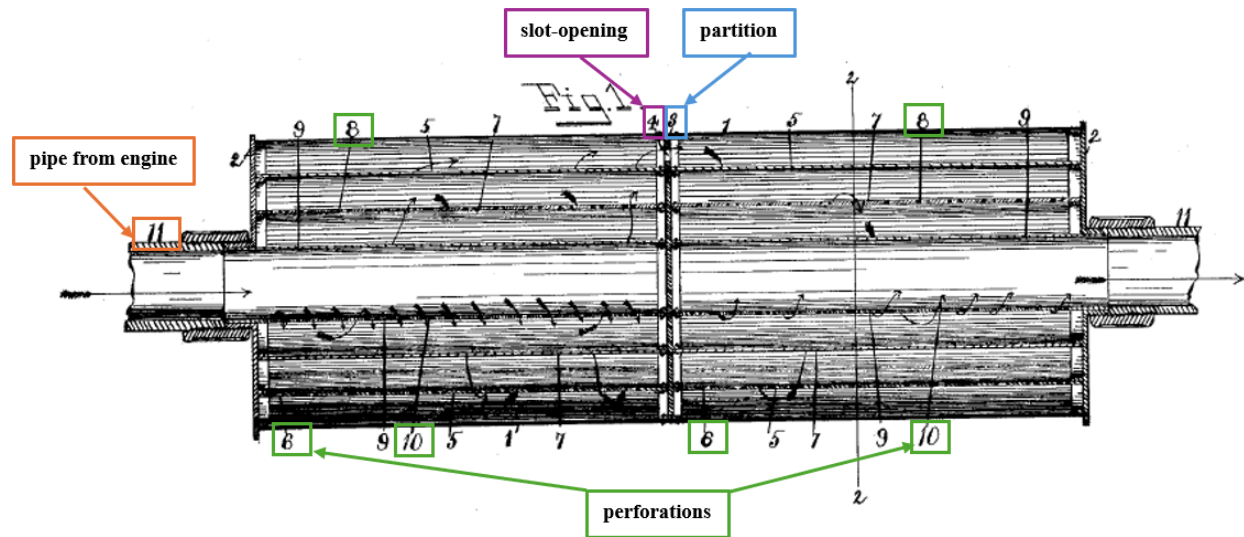
Nor would a person of ordinary skill in the art be motivated to modify Barlowatz such that it had a plurality of deflectors. Petitioner suggests that a

POSITA might modify Barlowatz “by increasing or decreasing the winding of the coils,” but that would not change the fact that each coil is still one continuous helically wound metal strip, and thus still at best a single deflector. Neitzel Decl. ¶146. Thus, Petitioner has failed to show that Claims 9 and 20 are obvious over Barlowatz.

G. Ground 7: Barlowatz in view of Reeves Does Not Render Claim 2 Obvious.

Claim 2⁹ is patentable over Ground 7 because Barlowatz in view of Reeves does not render Claim 2 obvious. As discussed above, Barlowatz fails to disclose the “fluid outlet” limitation of claim 1. *See* Sections.VI.E & F. The addition of Reeves does nothing to cure this deficiency. When the muffler in Reeves provides a pathway for gases to move between different chambers, the gases ultimately return to Reeves’s central chamber before exiting at the right of pipe 11, as indicated by the arrows:

⁹ Claim 2 is the only claim at issue for Ground 2.



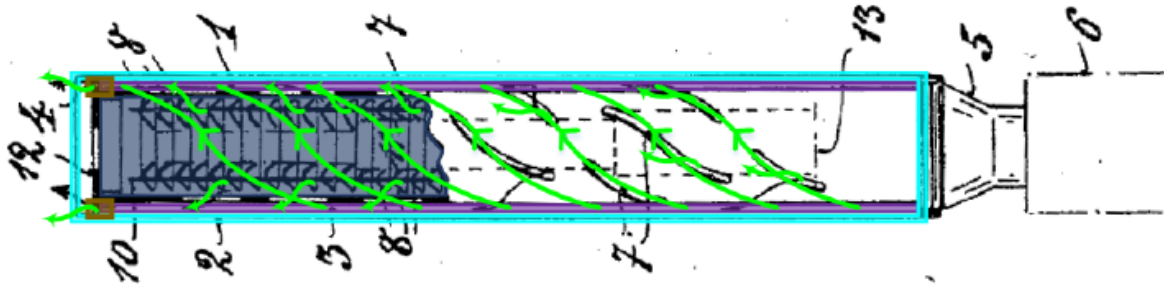
Ex. 1019, 1:32-33; Fig. 1 (annotated). In this respect, Reeves is no different than Barlowatz. Petitioner’s expert agrees—he confirmed at his deposition that all of the fluid passing through the exhaust muffler of Reeves would exit out the pipe 11. Ex. 2002 (Nixon Dep.) at 77:12-78:2. Neither Petitioner nor its expert otherwise address the lack of the claimed “fluid outlet” in Reeves. *See* Pet. at 71; Ex. 1013, ¶¶272-74. Thus, Petitioner has failed to show that Claims 9 and 20 are obvious over Barlowatz in view of Reeves.

H. Ground 8: Eichenseher in View of Barlowatz Does Not Render Claims 3, 9, or 18 Obvious.

Claims 3, 9, and 18¹⁰ are patentable over Ground 8. In Ground 8, Petitioner contends that a POSITA would combine Eichenseher with Barlowatz. Petitioner

¹⁰ Ground 8 applies to claims 1, 3-5, 8, 9, 18, and 19. However, Patent Owner is seeking to non-contingently amend claims 1, 4, 5, 8, and 19. Patent Owner thus limits its Response to the claims 3, 9, and 18.

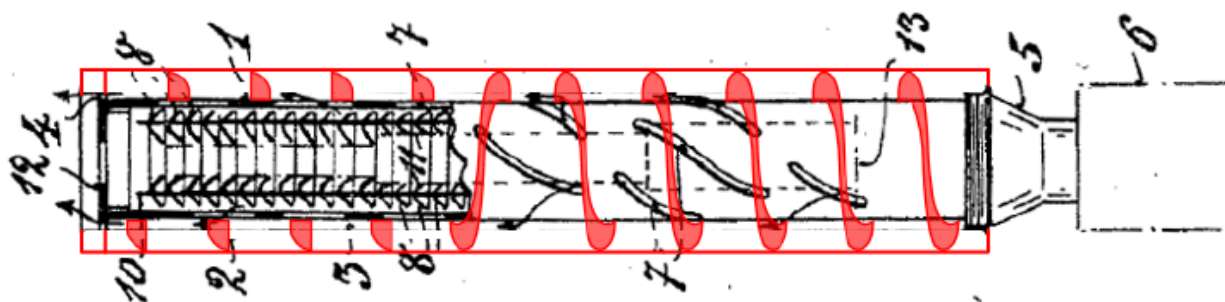
recognizes that Eichenseher's silencer alone lacks any "serpentine pathway," as its gases flow helically without changing direction, as shown for example in Petitioner's annotated Figure:



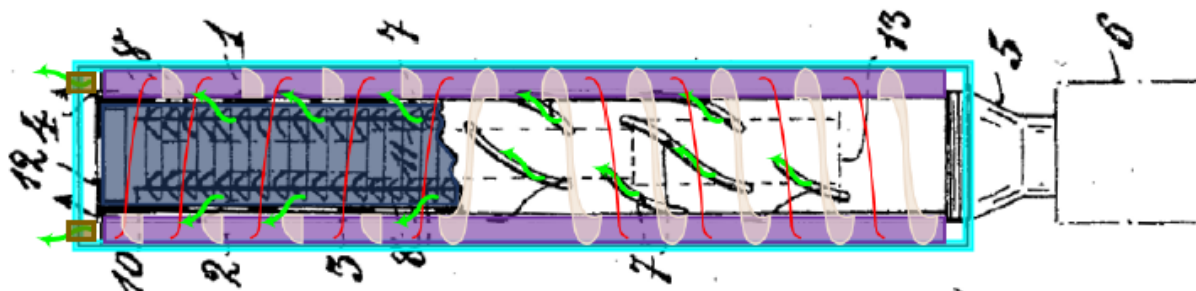
EX1021, FIG. 1 (Petitioner-annotated)

Pet. at 73; *see also* Ex. 1013, ¶277. Thus, Petitioner proposes to add the coils of Barlowatz in order to provide a "radially serpentine pathway." Specifically, Petitioner and its expert propose "modify[ing] Eichenseher's ESD to include an outer coil (e.g., Barlowatz's outer coil c) in Eichenseher's cavity 3 that forms a first helical channel extending around the inner cylinder 1 in a first direction 30 (e.g., clockwise) and a second helical channel extending around the inner cylinder 1 in an opposing direction (e.g., counterclockwise)." Pet. at 74-75. Petitioner and

its expert provide drawings of its proposed combination as follows:



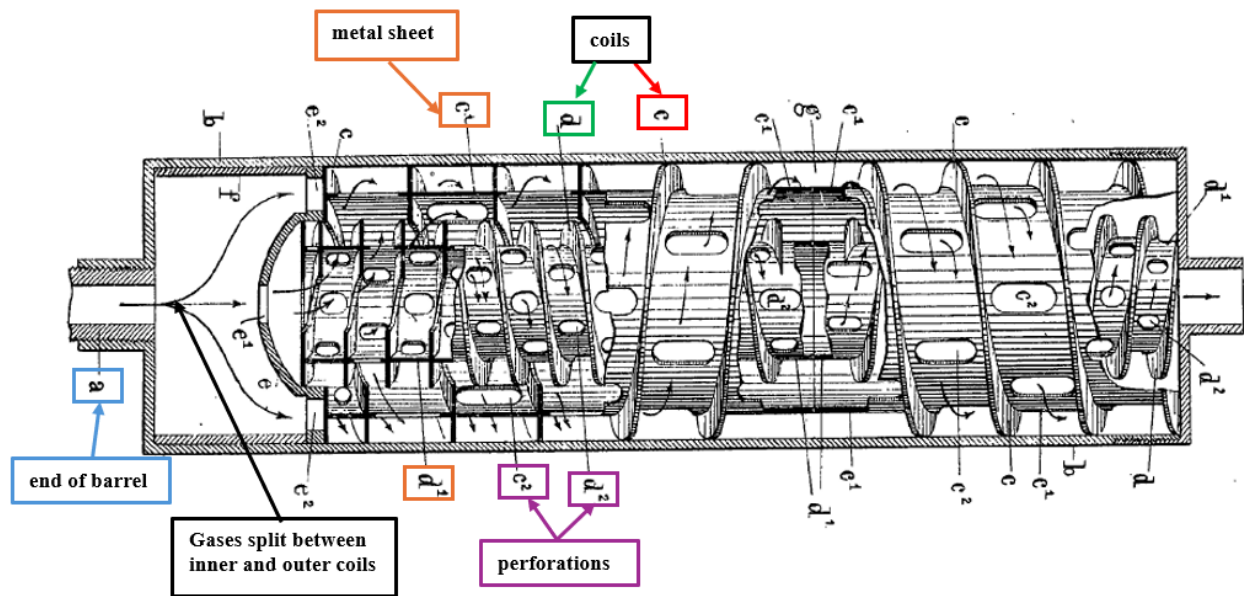
EX1013, 118, Figure 13 (Eichenseher's modified ESD with modifications in red)



Id., 119, Figure 14 (mapping to Eichenseher's modified ESD)

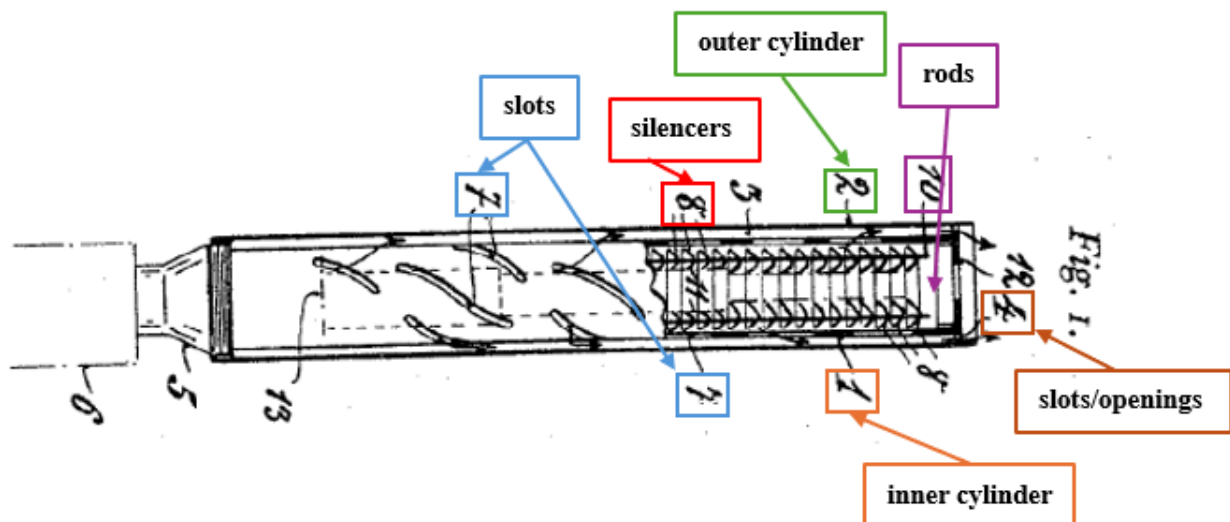
Pet. at 75; *see also* Ex. 1013, ¶279.

These two different designs, however, are incompatible, and the combination Petitioner proposes would work contrary to the purposes of each reference. Neitzel Decl. ¶154. As noted previously, Barlowatz's coils are designed to split the gases such that they flow through the two coils in different directions and "counteract each other." Ex. 1018 at 2. Barlowatz lacks a fluid outlet from its alleged off axis chamber created by the outer coil and instead directs those gases back to the inner coil so that the gases counteract one another, as indicated by the arrows:



Ex. 1018 at 1, 4 (figure annotated).

In contrast, Eichenseher directs gases in a helical pattern and then out of the cylinder at slots/openings 4 in the outer chamber (i.e., the alleged off axis chamber):



Ex. 1021 at 2; Fig. 1 (annotated).

Combining these two references as Petitioner proposes would undermine the design of each reference. Neitzel Decl. ¶156. Barlowatz sends gases out of the central chamber for a purpose—so that the gases from the alleged off axis chamber reconnect and counteract each other before exiting the device. Eichenseher, however, works fundamentally differently—it relies on the sound absorbers 8 arranged along the rods in its inner cylinder to absorb sound and direct gases toward the outer chamber where they can escape at slots/opening 4. Neitzel Decl. ¶156. Specifically, Eichenseher provides that its purpose is “to ensure that the gases swirling with the projectile . . . can quickly escape through slots 7 into cavity 3 and from there through openings 4 into the open air with as little resistance as possible.” Ex. 1021 at 1. Returning these gases to the path of the projectile and the remaining gases behind it would defeat this purpose. Neitzel Decl. ¶156.

Thus, combining the references would either result in a device with Barlowatz’s coils in which gases exit out of the alleged off-axis chamber, defeating the purpose of Barlowatz, or a device with Barlowatz’s coils in which gases exit out the central chamber, defeating Eichenseher’s design to allow gases to escape with as little resistance as possible. Neitzel Decl. ¶157. Moreover, there is no suggestion in either reference that a POSITA should seek to combine them in this way. Neitzel Decl. ¶158. Petitioner and its expert’s conclusory assertion that a POSITA might do so “to improve noise suppression by increasing a path length for

the deflected energy and further slowing the speed of the deflected energy” does not even attempt to grapple with these issues and is insufficient to meet its burden to demonstrate obviousness. *See, e.g., TQ Delta, LLC v. Cisco Sys.*, 942 F.3d 1352, 1361 (Fed. Cir. 2019) (summarizing cases where Fed. Cir. has repeatedly “rejected obviousness determinations based on conclusory and unsupported expert testimony”).

VII. CONCLUSION

For the foregoing reasons, Patent Owner respectfully requests that the Board sustain Claims 2, 3, 6, 9, 12-14, 18 and 20 of the '750 Patent over the asserted Grounds.

Dated: April 29, 2025

/s/ Brent N. Bumgardner

Brent N. Bumgardner

Registration No. 48,476

NELSON BUMGARDNER CONROY P.C.

3131 W. 7th Street, Suite 300

Fort Worth, Texas 76107

Telephone: (817) 377-9111

Email: brent@nelbum.com

David T. DeZern

Registration No. 60,117

NELSON BUMGARDNER CONROY P.C.

2727 N. Harwood Street, Suite 250

Dallas, Texas 75201

Telephone: (214) 446-4950

Email: david@nelbum.com

Attorneys for Patent Owner

HuxWrx Safety Co. LLC

CERTIFICATE OF COMPLIANCE WITH WORD COUNT

Pursuant to 37 C.F.R. § 42.24(d), I certify that this Response complies with the type-volume limits of 37 C.F.R. § 42.24(b)(2) because it contains 10,561 words, excluding the parts of this Patent Owner's Response that are exempted by 37 C.F.R. § 42.24(a)(1), according to the word processing system used to prepare this Patent Owner's Response.

Dated: April 29, 2025

By: /s/ Brent N. Bumgardner
Brent N. Bumgardner
Registration No. 48,476
NELSON BUMGARDNER CONROY P.C.
3131 W. 7th Street, Suite 300
Fort Worth, Texas 76107
Telephone: (817) 377-3490
Email: brent@nelbum.com

Attorney for Patent Owner

CERTIFICATE OF SERVICE

I hereby certify that on April 29, 2025 a copy of Patent Owner's Response has been served in its entirety via email on the following:

Email: tgetzoff@hollandhart.com
 jrroeser@hollandhart.com
 pwharris@hollandhart.com

Dated: April 29, 2025

/s/ Brent N. Bumgardner
Brent N. Bumgardner
Registration No. 48,476
NELSON BUMGARDNER
CONROY P.C.
3131 W. 7th Street, Suite 300
Fort Worth, Texas 76107
Telephone: (817) 377-9111
Email: brent@nelbum.com

Attorney for Patent Owner

Claim Element	Claim Language
1.0 (Pre)	1. An energy capture and control device, comprising:
1.1	a) a central chamber oriented along a central axis within an outer shell, said central chamber having an inlet configured to receive a high energy material from a high energy outlet;
1.2	b) a common off axis chamber oriented within the outer shell in fluid communication with the central chamber and having a fluid outlet and multiple internal walls defining a serpentine fluid pathway which is at least one of axially serpentine and radially serpentine and which dissipates energy transferred from the high energy material; and
1.3	c) a plurality of deflectors oriented in series along the central axis of the central chamber and configured to deflect the energy from the high energy material to the common off axis chamber.
2	The device of claim 1, wherein the common off axis chamber comprises a plurality of sub-chambers defined by the plurality of deflectors, each with the radially serpentine fluid pathway, and wherein the radially serpentine fluid pathways of each of the deflectors are axially non-linearly interconnected along an outermost portion of the plurality of sub-chambers.
3	The device of claim 1, wherein the central chamber further comprises a locking block oriented at the inlet, said locking block having an engagement surface configured to attach to the high energy outlet and a hollow interior along the central axis, said hollow interior having a reducing throat portion and a flared outlet.
4	The device of claim 1, wherein the plurality of deflectors each comprise a frustoconical shape having a hollow interior along the central axis and a flared exit portion.
5	The device of claim 4, wherein the plurality of deflectors include a primary deflector, a secondary deflector, and a first tertiary deflector.
6	The device of claim 5, wherein the fluid communication between the common off axis chamber and the central chamber occurs only at the primary deflector, the secondary deflector and a first tertiary deflector.

Claim Element	Claim Language
7	The device of claim 5, wherein at least one tertiary deflector is at least partially engaged within the flared exit portion of an adjacent deflector.
8	The device of claim 4, wherein the plurality of deflectors span substantially the entire central axis along the central chamber.
9	The device of claim 1, wherein the multiple internal walls are formed to produce a radially serpentine fluid pathway.
10	The device of claim 1, wherein the multiple internal walls are formed by multiple concentric tubes having progressively larger diameters so as to form annular spaces between each adjacent tube, and having alternating ends offset so as to produce the axially serpentine fluid annular pathway.
11	The device of claim 10, wherein the multiple concentric tubes include an innermost tube which includes orifices oriented to allow fluid to pass from the central chamber into a first annular space adjacent the innermost tube and through the annular spaces of progressively larger diameter.
12	The device of claim 11, wherein the annular spaces further include a helical wall oriented within at least one of the annular spaces to direct fluids along a helical path within the at least one annular space.
13	The device of claim 12, wherein the helical wall has a quadrilateral cross-section or a circular cross-section.
14	The device of claim 12, wherein the helical wall has a winding ratio (windings:diameter) of about 3:1 to about 8:1.
15	The device of claim 1, wherein the common off axis chamber further includes an annular dampening chamber oriented about the central chamber and being filled with an energy absorbent material.
16	The device of claim 15, wherein the dampening chamber is oriented adjacent the outer shell.
17	The device of claim 15, wherein the energy absorbent material is selected from the group consisting of powder tungsten filament, heavy metal powder, graphite, polymer, aluminum, stainless steel,

Claim Element	Claim Language
	carbon steels, iron, copper, tantalum, titanium, vanadium, chromium, zirconium, carbides of these, alloys of these, and combinations thereof.
18	The device of claim 1, wherein the outer shell includes an end cap assembly at an outlet end of the central chamber and which allows fluid to escape from the common off axis chamber through the fluid outlet, the fluid outlet being only accessible to the fluid in the common off axis chamber.
19 (Pre)	An energy capture and control device, comprising:
19.1	a) a central chamber oriented along a central axis within an outer shell, said central chamber having an inlet configured to receive a high energy material from a high energy outlet;
19.2	b) a common off axis chamber oriented within the outer shell in fluid communication with the central chamber via a plurality of orifices and further includes a fluid outlet, the common off axis chamber comprising a serpentine fluid pathway which is at least one of axially serpentine and radially serpentine; and
19.3	c) a plurality of deflectors oriented in series along the central axis of the central chamber, wherein a position of multiple individual deflectors of the plurality of deflectors corresponds with the individual orifices of the plurality of orifices to the common off axis chamber.
20	The device of claim 19, wherein the common off axis chamber further comprises at least one helical wall defining the axially serpentine fluid pathway, the at least one helical wall being configured to produce an axially serpentine fluid pathway which helically spirals around the central chamber and which dissipates energy transferred from the high energy material.
21	The device of claim 19, further comprising multiple internal walls defining the axially serpentine fluid pathway, the multiple internal walls being formed by multiple concentric tubes having progressively larger diameters so as to form annular spaces between each adjacent tube, and having alternating ends offset so as to produce a serpentine fluid annular pathway.

Claim Element	Claim Language
22 (Pre)	A method for energy capture and control from a high energy device, comprising:
22.1	a) discharging a high energy material from the high energy device through an energy capture and control device comprising a central chamber oriented along a central axis within an outer shell, said central chamber having an inlet configured to receive a high energy material from a high energy outlet, and a common off axis chamber oriented within the outer shell in fluid communication with the central chamber, the common off axis chamber comprising an axially serpentine fluid pathway and a fluid outlet; and
22.2	b) capturing energy within the common off axis chamber via a plurality of orifices from the central chamber using the axially serpentine fluid pathway, the energy being associated with discharge of the high energy material from the high energy discharge device.