IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

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Application No.:	17/190,224	)	Art Unit:
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Title:	SYSTEMS FOR RADIOFREQUEUNCY NEUROTOMY	)	
		)	
Examiner:	Christine A. Dedoulis	)	
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Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

AMENDMENT AND RESPOSNE TO OFFICE ACTION

Commissioner:

Responsive to the Office Action dated October 14, 2025, in the above-identified application, the Applicant respectfully requests reconsideration of the pending claims in view of the amendments and remarks herein.

Amendments to the Claims are begin on page 2.

Remarks begin on page 12.

Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1-5. (Cancelled)

6. (Currently amended) A radiofrequency neurotomy system for treating a patient, the radiofrequency neurotomy system comprising:

a cannula that is 16 gauge or smaller and is conductive, the cannula comprising ~~and comprises~~:

a lumen;

a proximal end through which a central longitudinal axis passes; and

a distal end;

a fitting coupled to the cannula, the fitting being in fluid communication with the lumen of the cannula;

a tip that is conductive and is attached to the distal end of the cannula, the tip comprising:

a channel that passes through the tip;

~~a transition region;~~

a body portion at an angle of between about 5 degrees and about 90 degrees relative to the central longitudinal axis ~~of~~ that passes through the proximal end of the cannula; and

a tapered portion that comprises a sharpened point at a distal end thereof that is configured to pierce ~~the~~ skin of the patient, the tapered portion further comprising a fluid port in fluid communication with the channel of the tip ~~that is configured to transfer fluid that has passed through the lumen of the cannula and through the channel of the tip~~;

a wire port spaced from the fluid port;

a transition region; and

a wire that is conductive and is configured to transmit radiofrequency energy and monitor temperature, the wire being ~~and is~~ movable through the cannula to interact with the transition region ~~of the tip~~, wherein the transition region ~~of the tip~~ is configured to physically contact and outwardly deflect a distal end of the wire as the distal end of the wire is advanced distally along the transition region, the wire being advanceable to a deployed position in which the distal end of the wire extends outwardly from the wire port,

wherein the fitting is configured to couple with a fluid delivery device for delivery of fluid through the lumen of the cannula, the wire port being configured to permit a portion of the fluid to exit therethrough and the channel of the tip being configured to permit another portion of the fluid to pass therethrough and exit through the fluid port, and

wherein when the wire is in the deployed position[[,]]:

the tip and the wire are in electrical communication so as to operate together as an expanded electrode that is configured to deliver radiofrequency energy to a nerve of the patient for treatment of pain; and

the wire monitors temperature near the tip.

7. (Currently amended) The radiofrequency neurotomy system of claim 6, wherein a proximal portion of the tip defines the transition region, and wherein the transition region is longitudinally more proximal than a region at which an outer surface of the tip smoothly transitions to an outer surface of the cannula ~~when the wire is in the deployed position, the tip and the wire are in physical contact with each other~~.

8. (Previously presented) The radiofrequency neurotomy system of claim 6, wherein the cannula is configured to conduct electrical signals, wherein the cannula comprises insulation, and wherein the insulation is not present at a distal part of the cannula that is adjacent to the body portion of the tip.

9. (Currently amended) The radiofrequency neurotomy system of claim 6, wherein the tip and the wire are in electrical communication due to physical contact among ~~the~~ conductive components of the radiofrequency neurotomy system.

10. (Currently amended) The radiofrequency neurotomy system of claim 6, wherein the cannula defines at least a portion of the wire port.

11. (Previously presented) The radiofrequency neurotomy system of claim 6, wherein when the wire is in the deployed state, the distal end of the wire that extends outwardly from the wire port is substantially straight.

12. (Currently amended) The radiofrequency neurotomy system of claim 6, wherein the distal end of the wire is at an angle relative to the central longitudinal axis of the cannula when the wire is in the deployed position.

13. (Currently amended) The radiofrequency neurotomy system of claim 6, wherein the distal end of the wire is ~~disposed~~ angled away from the ~~tip~~ central longitudinal axis that passes through the proximal end of the cannula when the wire is in the deployed position.

14. (Currently amended) The radiofrequency neurotomy system of claim 6, wherein a proximal portion of the tip that is positioned within the lumen of the cannula defines the transition region ~~the cannula is 16 gauge or smaller~~.

15. (Previously presented) The radiofrequency neurotomy system of claim 6, wherein the wire port is longitudinally spaced from the fluid port such that the wire port is at a proximal position relative to the fluid port.

16. (Currently amended) The radiofrequency neurotomy system of claim 6, ~~further comprising a~~ wherein the fitting is proximal to the cannula ~~that is in fluid communication with the lumen of the cannula, the fitting being configured to attach to a fluid delivery device to permit fluid from the fluid delivery device to pass into and through the lumen of the cannula when the distal end of the cannula is in the patient~~.

17. (Currently amended) The radiofrequency neurotomy system of claim 6, wherein the transition region ~~of the tip~~ comprises one or more of a curved surface and a planar surface along which the wire is advanced distally to achieve outward deflection.

18. (Previously presented) The radiofrequency neurotomy system of claim 6, wherein the wire is configured to act as a thermocouple for measuring temperature.

19. (Previously presented) The radiofrequency neurotomy system of claim 6, wherein the tip and the cannula are different components and a proximal portion of the tip is positioned within the distal end of the cannula.

20. (Currently amended) The radiofrequency neurotomy system of claim 6, wherein a proximal portion of the tip that is spaced from the tapered portion of the tip is positioned within the lumen of the cannula, and wherein the proximal portion of the tip defines the transition region at a position that is longitudinally more proximal than a region at which a smooth transition exists between the tip and the cannula ~~the proximal end of the cannula is cylindrical~~.

21. (Currently amended) The radiofrequency neurotomy system of claim 6 ~~claim 20~~, wherein the body portion of the tip is cylindrical.

22. (Currently amended) The radiofrequency neurotomy system of claim 21 ~~claim 20~~, wherein the body portion of the tip is at an angle of between about 10 degrees and about 20 degrees relative to the central longitudinal axis of the ~~cylindrical~~ proximal end of the cannula.

23. (Currently amended) The radiofrequency neurotomy system of claim 21 ~~claim 20~~, wherein the body portion of the tip is at an angle of about 10 degrees relative to the central longitudinal axis of the ~~cylindrical~~ proximal end of the cannula.

24. (Currently amended) The radiofrequency neurotomy system of claim 6, wherein when the wire is in the deployed position:

a first portion of the wire is proximal to the proximal end of the cannula; and

a second portion of the wire is in the lumen of the cannula~~; and~~

~~a third portion of the wire extends outwardly from the wire port~~.

25-26. (Cancelled)

27. (Currently amended) The radiofrequency neurotomy system of claim 6, wherein:

a proximal end of the fitting is proximal to a proximal end of the cannula;

the distal end of the wire is at an angle relative to the central longitudinal axis, is disposed away from the tip, and is substantially straight when the wire is in the deployed position;

the wire port is longitudinally spaced from the fluid port such that the wire port is ~~at a proximal position relative to~~ longitudinally more proximal than is the fluid port;

the cannula is configured to conduct electrical signals, wherein the cannula comprises insulation, and wherein the insulation is not present at a distal part of the cannula that is adjacent to the body portion of the tip;

the transition region comprises one or more of a curved surface and a planar surface;

a proximal portion of the tip that is positioned within the distal end of the cannula defines the transition region at a position that is longitudinally more proximal than a region at which an outer surface of the tip smoothly transitions to an outer surface of the cannula;

the body portion of the tip is cylindrical;

the wire is configured to act as a thermocouple for measuring temperature; and

when the wire is in the deployed position:

a first portion of the wire is proximal to the proximal end of the cannula; and

a second portion of the wire is in the lumen of the cannula~~; and~~

~~a third portion of the wire extends outwardly from the wire port~~.

28. (Currently amended) A radiofrequency neurotomy system for treating a patient, the radiofrequency neurotomy system comprising:

a needle comprising:

a fitting at a proximal end of the needle;

a distal end oriented at a first angle of between about 5 degrees and about 90 degrees relative to a central longitudinal axis that extends through the proximal end of the needle;

a cannula that is 16 gauge or smaller and comprises a lumen; and

a tip connected to the cannula, the tip being configured to pierce ~~the~~ skin of the patient, the tip comprising[[:]] a channel that extends through the tip[[;]] and a fluid port that is in fluid communication with the channel; ~~and~~

a transition region; and

a wire port at a position proximal to the fluid port; and

a wire movable through the cannula to interact with the transition region ~~of the tip~~, the wire being configured to monitor temperature,

wherein the fitting is configured to couple with a fluid delivery device for delivery of fluid through the lumen of the cannula, with the wire port being configured to permit a portion of the fluid to exit the needle therethrough and with the channel of the tip being configured to permit another portion of the fluid to pass therethrough and exit the needle through the fluid port,

wherein the transition region is configured to outwardly deflect a distal end of the wire due to physical contact as the distal end of the wire is advanced distally along the transition region while the wire is being moved to a deployed position ~~and~~, and

wherein, when the wire is in the deployed position[[,]]:

the tip and the wire are in electrical communication so as to operate together as an expanded electrode that is configured to deliver radiofrequency energy to a target nerve of the patient; and

the wire monitors temperature near the tip.

29. (Currently amended) A radiofrequency neurotomy system for treating a patient, the radiofrequency neurotomy system comprising:

a cannula that comprises:

a lumen;

a proximal end ~~through which a longitudinal axis passes~~; and

a distal end;

a tip attached to the distal end of the cannula, the tip comprising:

a channel that passes through the tip;

a proximal portion that comprises a transition region, the proximal portion being positioned within the lumen of the cannula at the distal end of the cannula;

~~a body portion at the distal end of the cannula that is at an angle of between about 5 degrees and about 90 degrees relative to the longitudinal axis of the proximal end of the cannula;~~ and

a distal portion positioned distal to the proximal portion and the transition region of the tip, the distal portion comprising a proximal end that has a diameter substantially equal to a diameter of the cannula to provide a smooth transition between the tip and the cannula, the distal portion further comprising ~~a tapered portion that comprises~~ a sharpened point ~~at a distal end thereof that is~~ configured to pierce the skin of the patient~~, the tapered portion further comprising~~ and a first port configured to transfer fluid, the first port being in fluid communication with the channel;

a second port at least partially defined by the cannula that is substantially aligned with the transition region and is spaced from the first port; and

a wire movable relative to the cannula to a deployed position,

wherein as the wire is moved to the deployed position, a distal end of the wire is deflected outwardly due to physical contact between the distal end of the wire and the transition region of the tip to extend through the second port, and

wherein, when the wire is in the deployed position, the tip and the wire are in electrical communication so as to operate together as an expanded electrode that is configured to deliver radiofrequency energy to a nerve of the patient for treatment of pain.

30. (Cancelled)

31. (Currently amended) A radiofrequency neurotomy system for treating a patient, the radiofrequency neurotomy system comprising:

a cannula comprising a proximal end, a distal end, a lumen, and a wire port;

a tip secured to the distal end of the cannula, the tip being configured to pierce the skin of the patient, the tip comprising a proximal portion that is inserted into the lumen of the cannula and a distal portion that extends beyond the distal end of the cannula, the distal portion comprising a region having a diameter that is substantially equal to a diameter of the distal end of the cannula to provide a smooth transition between the tip and the cannula, the tip comprising a channel that extends through the tip and a fluid port that is spaced longitudinally from the wire port, the tip further comprising a transition region that is defined by the proximal portion of the tip at a position that is longitudinally more proximal than the smooth transition between the tip and the cannula; and

a wire movable through the cannula, wherein the transition region of the tip is configured to physically contact and deflect outwardly a distal end of the wire through the wire port of the cannula as the wire is advanced distally to a deployed position,

wherein, when the wire is in the deployed position, the tip and the wire are in electrical communication so as to operate together as an expanded electrode that is configured to deliver radiofrequency energy to a nerve of the patient for treatment of pain.

32. (Currently amended) The radiofrequency neurotomy system of claim 28, ~~claim 24,~~ wherein:

the fitting is proximal to the cannula;

the distal end of the wire is at an angle relative to the central longitudinal axis, is disposed away from the tip, and is substantially straight when the wire is in the deployed position;

the cannula is configured to conduct electrical signals, wherein the cannula comprises insulation, and wherein the insulation is not present at a distal part of the cannula that is adjacent to the body portion of the tip;

the transition region comprises one or more of a curved surface and a planar surface;

a proximal portion of the tip that is positioned within the cannula and defines the transition region at a position that is longitudinally more proximal than a region at which an outer surface of the tip smoothly transitions to an outer surface of the cannula;

the wire is configured to act as a thermocouple for measuring temperature; and

when the wire is in the deployed position:

a first portion of the wire is proximal to the proximal end of the cannula; and

a second portion of the wire is in the lumen of the cannula ~~the wire is configured to act as a thermocouple for measuring temperature~~.

33. (New) The radiofrequency neurotomy system of claim 29, wherein:

the distal end of the wire is at an angle relative to the central longitudinal axis, is disposed away from the tip, and is substantially straight when the wire is in the deployed position;

the second port is longitudinally more proximal than is the first port;

the cannula is configured to conduct electrical signals, wherein the cannula comprises insulation, and wherein the insulation is not present at a distal part of the cannula that is adjacent to the body portion of the tip;

the transition region comprises one or more of a curved surface and a planar surface;

the transition region is at a position that is longitudinally more proximal than a region at which an outer surface of the tip smoothly transitions to an outer surface of the cannula;

the wire is configured to act as a thermocouple for measuring temperature; and

when the wire is in the deployed position:

a first portion of the wire is proximal to the proximal end of the cannula; and

a second portion of the wire is in the lumen of the cannula.

34. (New) The radiofrequency neurotomy system of claim 31, wherein:

the distal end of the wire is at an angle relative to the central longitudinal axis, is disposed away from the tip, and is substantially straight when the wire is in the deployed position;

the cannula is configured to conduct electrical signals, wherein the cannula comprises insulation, and wherein the insulation is not present at a distal part of the cannula that is adjacent to the body portion of the tip;

the transition region comprises one or more of a curved surface and a planar surface;

the wire is configured to act as a thermocouple for measuring temperature; and

when the wire is in the deployed position:

a first portion of the wire is proximal to the proximal end of the cannula;

a second portion of the wire is in the lumen of the cannula.

Remarks

This paper is submitted in response to the Office Action dated October 14, 2025. Claims 6-29, 31, and 32 were pending in the Application and stand rejected. By this paper, claims 6, 7, 9, 10, 12-14, 16, 17, 20-24, 27-29, 31, and 32 are amended and claims 25-26 are cancelled without prejudice or disclaimer, and new claims 33 and 34 are added. After entry of these amendments, claims 6-24, 27-29, and 31-34 will be pending in the application. The Applicant respectfully submits that all amendments are fully supported by the Application, as originally filed, and that none of the amendments add new matter to the Application.

Double Patenting

Claims 6-29, 31, and 32 stand rejected on the grounds of nonstatutory double patenting as being allegedly unpatentable over claims 1-29 of U.S. Patent No. 10,966,782 (the '782 Patent). The Applicant respectfully disagrees with the analysis of previously filed claims 6-29, 31, and 32 of the present application, the analysis of claims 1-29 of the '782 Patent, and the propriety of the double patenting rejection set forth in the Office Action. Moreover, at least independent claims 6-28, 29 and 31 of the present application are amended herein, such that the specific analysis and rejection in the Office Action no longer applies to the pending claims.

In any event, as previously stated in Applicant's prior response dated July 8, 2025, the Applicant has already submitted a terminal disclaimer with respect to the '782 Patent. That terminal disclaimer was filed on July 8, 2025, and was approved by the Office on that same date. The Applicant thus respectfully submits that the foregoing double-patenting rejection is mooted by that previously filed terminal disclaimer and respectfully requests that the rejection of claims 6-29, 31, and 32 and this basis be withdrawn.

Claim Rejections Under 35 U.S.C. § 112

Claims 31 stands rejected under pre-AIA 35 U.S.C. § 112, second paragraph, for its recitation of "radiofrequency neurotomy," rather than "radiofrequency neurotomy system." The Office Action correctly identifies the Applicant's intent to recite the latter

phrase, as now reflected in amended claim 31. Accordingly, the Applicant respectfully requests that the rejection of claim 31 under 35 U.S.C. § 112 be withdrawn.

Claim Rejections Under 35 U.S.C. § 103

Under pre-AIA 35 U.S.C. § 103(a), claims 6-17, 19-26, 28, and 29 stand rejected as allegedly being unpatentable over "Racz" (U.S. Patent No. 6,146,380) in view of "Lee" (U.S. Patent Application Publication No. 2007/0016183); claims 27 and 32 stand rejected as allegedly being unpatentable over Racz and Lee as applied to claims 6 and 24, and further in view of "Epstein" (U.S. Patent No. 8,241,276); and claim 31 stands rejected as allegedly being unpatentable over "Tullis" (U.S. Patent No. 7,918,852) in view of Lee. The Applicant respectfully traverses these rejections and does not acquiesce to the characterizations of the teachings of the cited references or the propriety of their combinations, as set forth in the Office Action. While the Applicant believes claims 6-29, 31, and 32 were patentable in their previous form, the Applicant has nevertheless amended, for example, each of independent claims 1, 28, 29, and 31.

The Applicant respectfully submits that neither Racz nor Tullis can be properly combined with Lee in the manner proposed in the Office Action due to, for example, substantial differences among the devices and systems disclosed in these references. For example, each of independent claims 1, 28, 29, and 31 recites "A radiofrequency neurotomy system." Further, independent claims 1 and 28 each recites that its respective system includes "a cannula that is 16 gauge or smaller," in combination with the remaining limitations of that claim.

Racz discloses a cannula having a bent tip that can be "positioned to 'hug' or otherwise approach the contour of . . . a bony structure that has nerves running near its surface, and the clinician may desire to modify or coagulate those nerves by electrical signals sent from the tip 14." Racz at 4:24-28, 49-56. Separately, Tullis discloses "an electrode assembly that can be used to perform a denervation procedure." Tullis at 1:16-17. In "denervation procedures[, s]mall diameter electrodes . . . ensure the precision application of the RF energy to the nerve to be ablated" and "expose the skin to minimal trauma." *Id.* at 2:32-39.

In contrast to each of Racz and Tullis, Lee discloses much larger devices for ablating uterine fibroids that are not suitable for neurotomy. Lee at ¶ [0084], *see also* Tullis at 2:39-42 ("Large diameter electrodes . . . could potentially cause aggravated trauma to the skin and underlying tissue during the insertion process.") Rather than "ensur[ing] precision application of the RF energy to the nerve to be ablated" (Tullis at 2:36-37), Lee's invention seeks to allow ablation of "a large volume of [a] tumor during a single ablation or limited number of applications of RF energy." Uterine fibroids are much larger than nerves, and Lee's invention seeks to address the problem of prior fibroid ablation devices in which "antennae" were advanced iteratively to ablate sequentially larger and larger volumes of a tumor—a time-consuming endeavor for large tumors. *See* Lee at ¶¶ [0008], [0009].

The Office Action alleges that "it would have been obvious to one having ordinary skill in the art at the time the invention was filed to have modified the system[s] as taught by Racz [and Tullis] to include" features allegedly disclosed in Lee because it would "achieve desired energy patterns and obtain a desired ablation tissue volume ([0092]; [0105]), thereby improving accuracy and control." Office Action at pp. 6, 7, 17. But this reasoning is contrary to the reality of the differences between Racz and Tullis on the one hand and Lee on the other. Indeed, the Office Action fails to establish that one of ordinary skill in the art would have a reasonable expectation of success in making the proposed modifications. MPEP § 2143.02.

The Applicant, however, does not believe it is necessary at this time to further address this fundamental shortcoming of the Office Action in establishing a *prima facie* case of obviousness with respect to any of the pending claims, and thus reserves the right to argue against the reference combinations set forth in the Office Action on this and other bases.

As detailed below, the Applicant respectfully submits that none of the references identified in the Office Action, whether considered individually or in combination (independent of the Applicant's position regarding the impropriety of such combination), teaches or renders obvious at least those portions of amended independent claims 1, 28,

29, and 31 emphasized below, in combination with the remaining limitations of each respective claim. *See* MPEP § 2143.03. On at least these bases, the Applicant respectfully requests that the rejections of independent claims 1, 28, 29, and 31 under pre-AIA 35 U.S.C. § 103(a) be withdrawn.

Claim 6

As amended, claim 6 recites (emphases added):

6. A radiofrequency neurotomy system for treating a patient, the radiofrequency neurotomy system comprising:

a cannula that is 16 gauge or smaller and is conductive, the cannula comprising:

a lumen;

a proximal end through which a central longitudinal axis passes; and

a distal end;

a fitting coupled to the cannula, the fitting being in fluid communication with the lumen of the cannula;

a tip that is conductive and is attached to the distal end of the cannula, the tip comprising:

a channel that passes through the tip;

a body portion at an angle of between about 5 degrees and about 90 degrees relative to the central longitudinal axis ~~of~~ that passes through the proximal end of the cannula; and

a tapered portion that comprises a sharpened point at a distal end thereof that is configured to pierce skin of the patient, the tapered portion further comprising a fluid port in fluid communication with the channel of the tip;

a wire port spaced from the fluid port;

a transition region; and

a wire that is conductive and is configured to transmit radiofrequency energy and monitor temperature, the wire being movable through the cannula to interact

with the transition region, wherein the transition region is configured to physically contact and outwardly deflect a distal end of the wire as the distal end of the wire is advanced distally along the transition region, the wire being advanceable to a deployed position in which the distal end of the wire extends outwardly from the wire port,

wherein the fitting is configured to couple with a fluid delivery device for delivery of fluid through the lumen of the cannula, the wire port being configured to permit a portion of the fluid to exit therethrough and the channel of the tip being configured to permit another portion of the fluid to pass therethrough and exit through the fluid port, and

wherein when the wire is in the deployed position:

the tip and the wire are in electrical communication so as to operate together as an expanded electrode that is configured to deliver radiofrequency energy to a nerve of the patient for treatment of pain; and

the wire monitors temperature near the tip.

<u>Claim 28</u>

As amended, claim 28 recites (emphases added):

28. A radiofrequency neurotomy system for treating a patient, the radiofrequency neurotomy system comprising:

a needle comprising:

a fitting at a proximal end of the needle;

a distal end oriented at a first angle of between about 5 degrees and about 90 degrees relative to a central longitudinal axis that extends through the proximal end of the needle;

a cannula that is 16 gauge or smaller and comprises a lumen; and

a tip connected to the cannula, the tip being configured to pierce skin of the patient, the tip comprising a channel that extends through the tip and a fluid port that is in fluid communication with the channel;

a transition region; and

a wire port at a position proximal to the fluid port; and

a wire movable through the cannula to interact with the transition region, the wire being configured to monitor temperature,

wherein the fitting is configured to couple with a fluid delivery device for delivery of fluid through the lumen of the cannula, with the wire port being configured to permit a portion of the fluid to exit the needle therethrough and with the channel of the tip being configured to permit another portion of the fluid to pass therethrough and exit the needle through the fluid port,

wherein the transition region is configured to outwardly deflect a distal end of the wire due to physical contact as the distal end of the wire is advanced distally along the transition region while the wire is being moved to a deployed position, and

wherein, when the wire is in the deployed position:

the tip and the wire are in electrical communication so as to operate together as an expanded electrode that is configured to deliver radiofrequency energy to a target nerve of the patient; and

the wire monitors temperature near the tip.

<u>Claim 29</u>

As amended, claim 29 recites (emphases added):

29. A radiofrequency neurotomy system for treating a patient, the radiofrequency neurotomy system comprising:

a cannula that comprises:

a lumen;

a proximal end; and

a distal end;

a tip attached to the distal end of the cannula, the tip comprising:

a channel that passes through the tip;

a proximal portion that comprises a transition region, the proximal portion being positioned within the lumen of the cannula at the distal end of the cannula; and

a distal portion positioned distal to the proximal portion and the transition region of the tip, the distal portion comprising a proximal end that has a diameter substantially equal to a diameter of the cannula to provide a smooth transition between the tip and the cannula, the distal portion further comprising a sharpened point configured to pierce the skin of the patient and a first port configured to transfer fluid, the first port being in fluid communication with the channel;

a second port at least partially defined by the cannula that is substantially aligned with the transition region and is spaced from the first port; and

a wire movable relative to the cannula to a deployed position,

wherein as the wire is moved to the deployed position, a distal end of the wire is deflected outwardly due to physical contact between the distal end of the wire and the transition region of the tip to extend through the second port, and

wherein, when the wire is in the deployed position, the tip and the wire are in electrical communication so as to operate together as an expanded electrode that is configured to deliver radiofrequency energy to a nerve of the patient for treatment of pain.

<u>Claim 31</u>

As amended, claim 31 recites (emphases added):

31. A radiofrequency neurotomy system for treating a patient, the radiofrequency neurotomy system comprising:

a cannula comprising a proximal end, a distal end, a lumen, and a wire port;

a tip secured to the distal end of the cannula, the tip being configured to pierce the skin of the patient, **the tip comprising a proximal portion that is inserted into the lumen of the cannula and a distal portion that extends beyond the distal end of the cannula, the distal portion comprising a region having a diameter that is substantially equal to a diameter of the distal end of the cannula to provide a smooth transition between the tip and the cannula**, the tip comprising a channel that extends through the tip and a fluid port that is spaced longitudinally from the wire port, **the tip further comprising a transition region that is defined by the proximal portion of the tip at a position that is longitudinally more proximal than the smooth transition between the tip and the cannula**; and

a wire movable through the cannula, wherein the transition region of the tip is configured to physically contact and deflect outwardly a distal end of the wire through the wire port of the cannula as the wire is advanced distally to a deployed position,

wherein, when the wire is in the deployed position, the tip and the wire are in electrical communication so as to operate together as an expanded electrode that is configured to deliver radiofrequency energy to a nerve of the patient for treatment of pain.

<u>Dependent Claims 7-24 and 27</u>

Each of claims 7-24 and 27 depends from claim 6 and thus is patentable over Racz, Lee, Epstein, and Tullis for at least the reasons discussed above with respect to claim 6. And claim 32 has been amended to depend from claim 28. Moreover, some or all of these dependent claims recite additional features that are separately and independently patentable over all references cited in the Office Action. The Applicant thus respectfully requests that the rejection of claims 7-27 and 32 under pre-AIA 35 U.S.C. § 103(a) be withdrawn. The Applicant also again notes that claims 25 and 26 are cancelled by this paper, thereby mooting the rejection of these claims.

New Claims 33 and 34

New claims 33 and 34 depend from independent claims 29 and 31, respectively, and thus are patentable over the cited art for at least the reasons discussed above with respect to claims 29 and 31, respectively. Moreover, each claim recites additional features that may separately and independently be patentable over the references cited in the Office Action.

Conclusion

In view of the foregoing amendments and remarks, the Applicant submits that the Application is in condition for allowance and thus requests the issuance of a Notice of Allowance. Please contact the undersigned attorney in the event that any remaining impediment to the prompt allowance of this application is found that could be clarified by a telephonic interview or may be overcome by an Examiner's Amendment.

DATED this 14th day of April, 2026.

Respectfully submitted,

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