(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
4 January 2007 (04.01.2007)

PCT

(10) International Publication Number
WO 2007/001981 A3

(51) International Patent Classification:
A61B 18/18 (2006.01)

(21) International Application Number:
PCT/US2006/023808

(22) International Filing Date: 20 June 2006 (20.06.2006)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/692,416 20 June 2005 (20.06.2005) US

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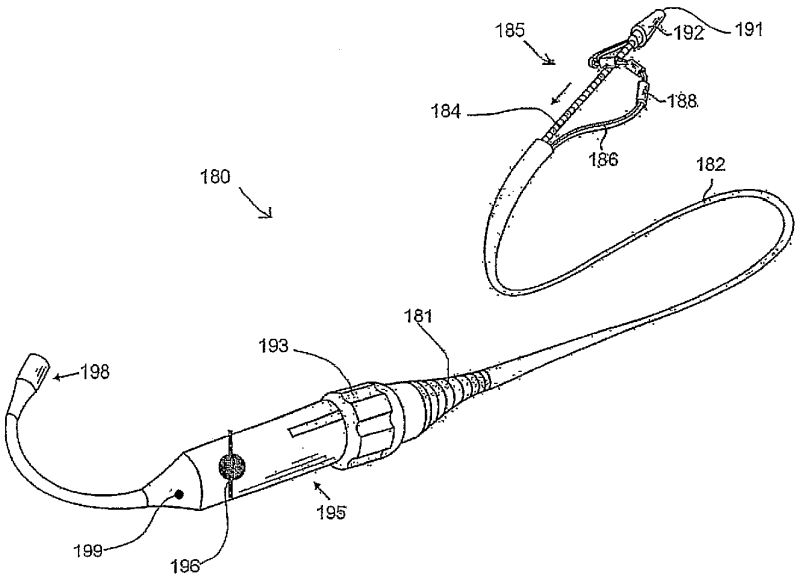
(81) Designated States *(unless otherwise indicated, for every kind of national protection available)*: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LV, LY, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) Designated States *(unless otherwise indicated, for every kind of regional protection available)*: ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI,

[Continued on next page]

(54) Title: ABLATION CATHETER



(57) Abstract: Devices, systems and methods are disclosed for the mapping of electrical signals and the ablation of tissue. Embodiments include an ablation catheter that has an array of ablation elements attached to a deployable carrier assembly. The carrier assembly can be transformed from a compact, linear configuration to a helical configuration, such as to map and ablate pulmonary vein ostia.

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FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

— *with international search report*

— *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments*

(88) Date of publication of the international search report:
5 April 2007

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/US 06/23808

A. CLASSIFICATION OF SUBJECT MATTER
IPC(8): - A61B 18/18 (2006.01)
USPC- 606/20
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
606/20--24, 607/96-101

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
Electronic Database USPTO WEST (USPAT, USPGPUB, EPAB, JPAB)
Search terms: catheter, electrode, helicial, helix, control shaft, ablation, mapping, virtual electrode, slide, block, stopper, RF

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 2005/0010095 A1 (Stewart et al.) 13 January 2005 (13.01.2005) Paragraph 67, Figs. 1A, 8.	3
Y	US 2004/0236324 A1 (Muller, et al.) 25 November 2004 (25.11.2004), Par [0043], Par [0031]	3
A	US 5370644 A (Langberg) 6 December 1994 (06.12.1994) entire document Fig. 10	3
A	US 2003/0208199 A1 (Keane) 6 November 2003 (06.11.2003) Entire Document	3

☐ Further documents are listed in the continuation of Box C. ☐

* Special categories of cited documents:
"A" document defining the general state of the art which is not considered to be of particular relevance
"E" earlier application or patent but published on or after the international filing date
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"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
25 October 2006 (25.10.2006)	02 FEB 2007
Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US, Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-3201	Authorized officer: Lee W. Young PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774

Form PCT/ISA/210 (second sheet) (April 2005)

We claim:

1. A device as described in reference to the drawings.

2. A method as described in reference to the drawings.

3. An ablation catheter comprising:

a) an elongated, flexible, tubular body member having a proximal end, a distal end and a lumen extending therebetween;

b) a control shaft coaxially disposed and slidingly received within the lumen of the Tubular Body Member;

c) a flexible carrier assembly which includes at least one ablation or mapping element that is adjustable from a near linear configuration to a partial helix by advancement or retraction of the control shaft.

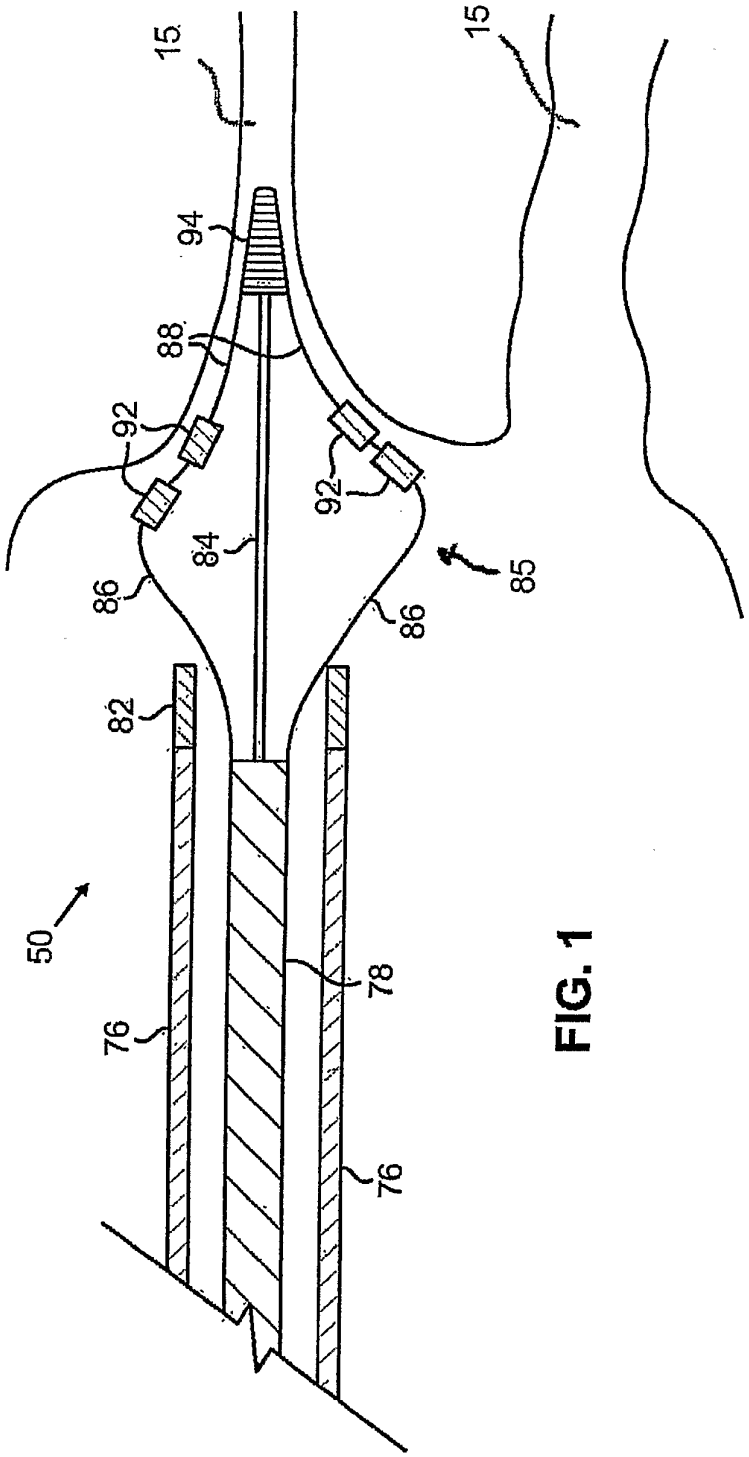

FIG. 1

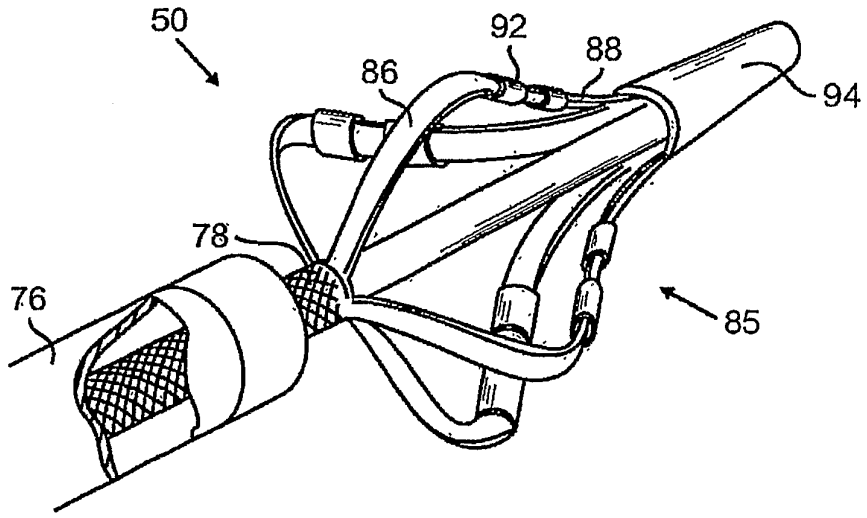

FIG. 2(A)

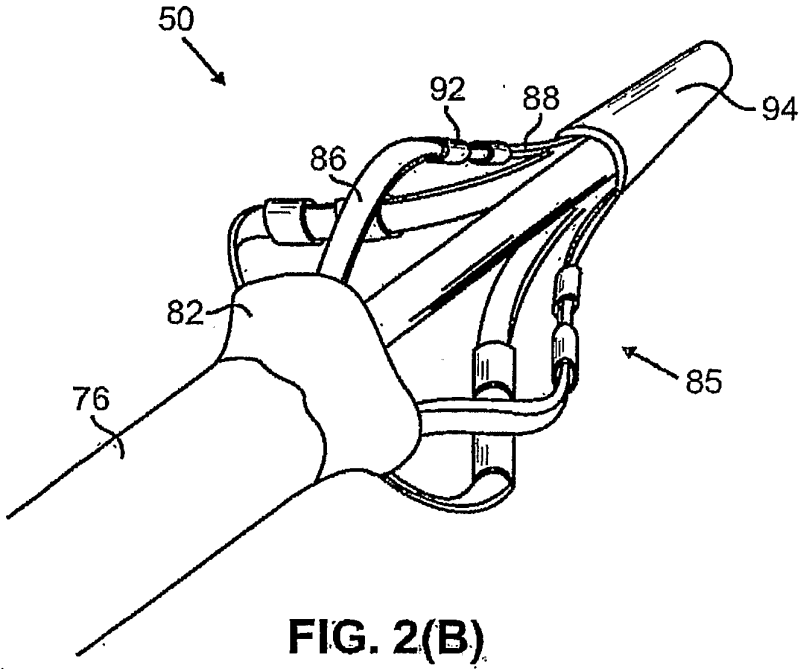

FIG. 2(B)

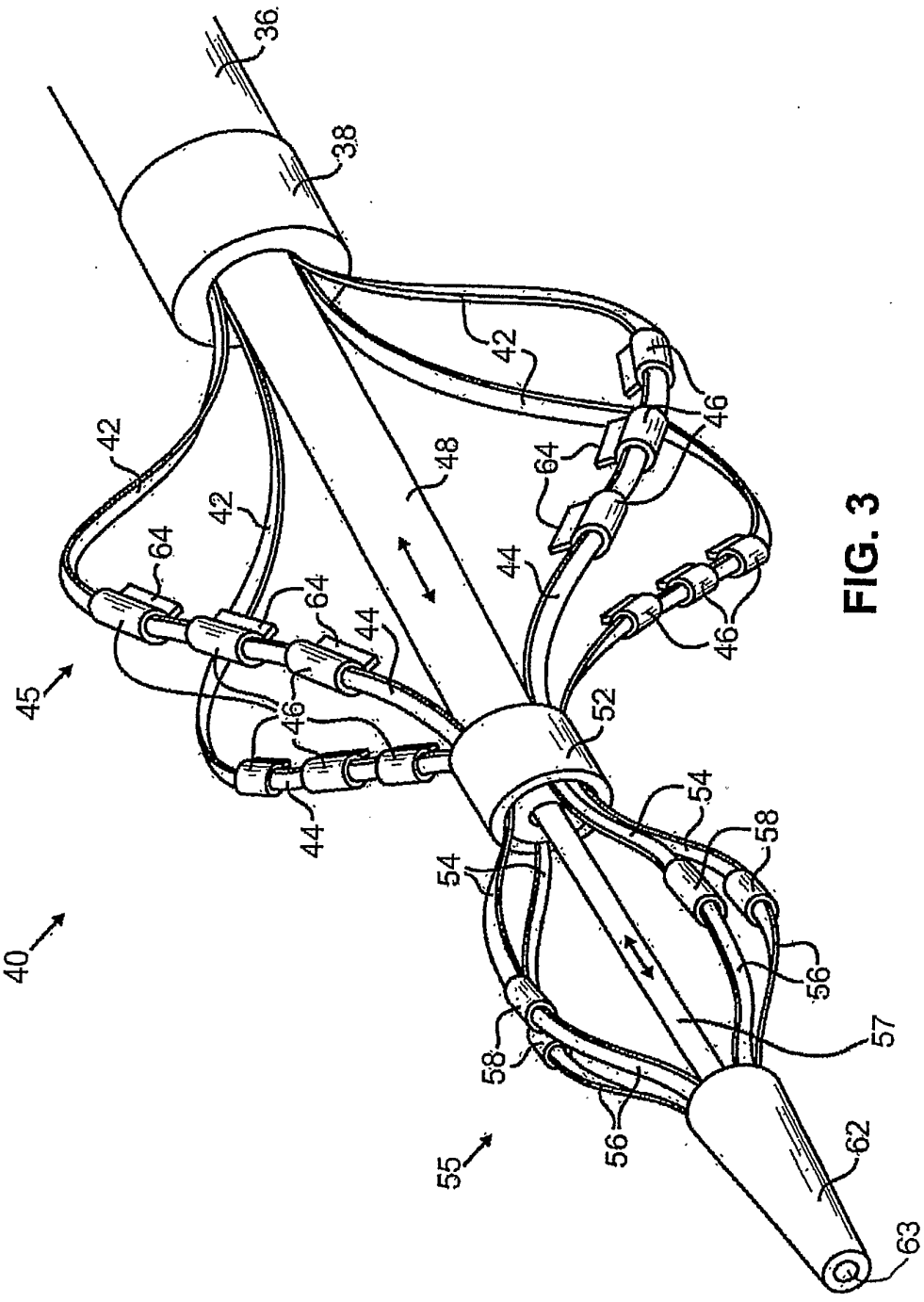
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FIG. 3

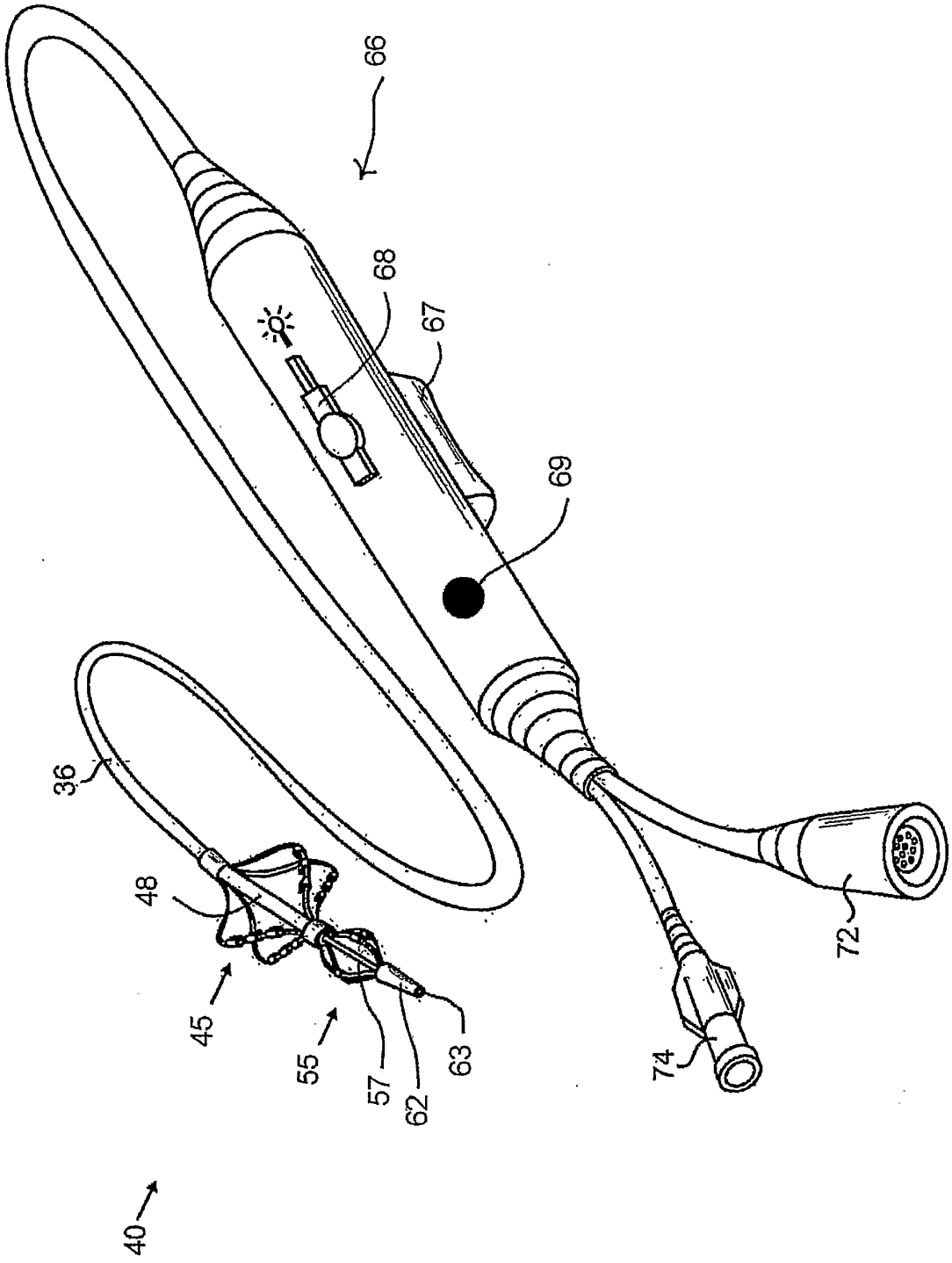

FIG. 4

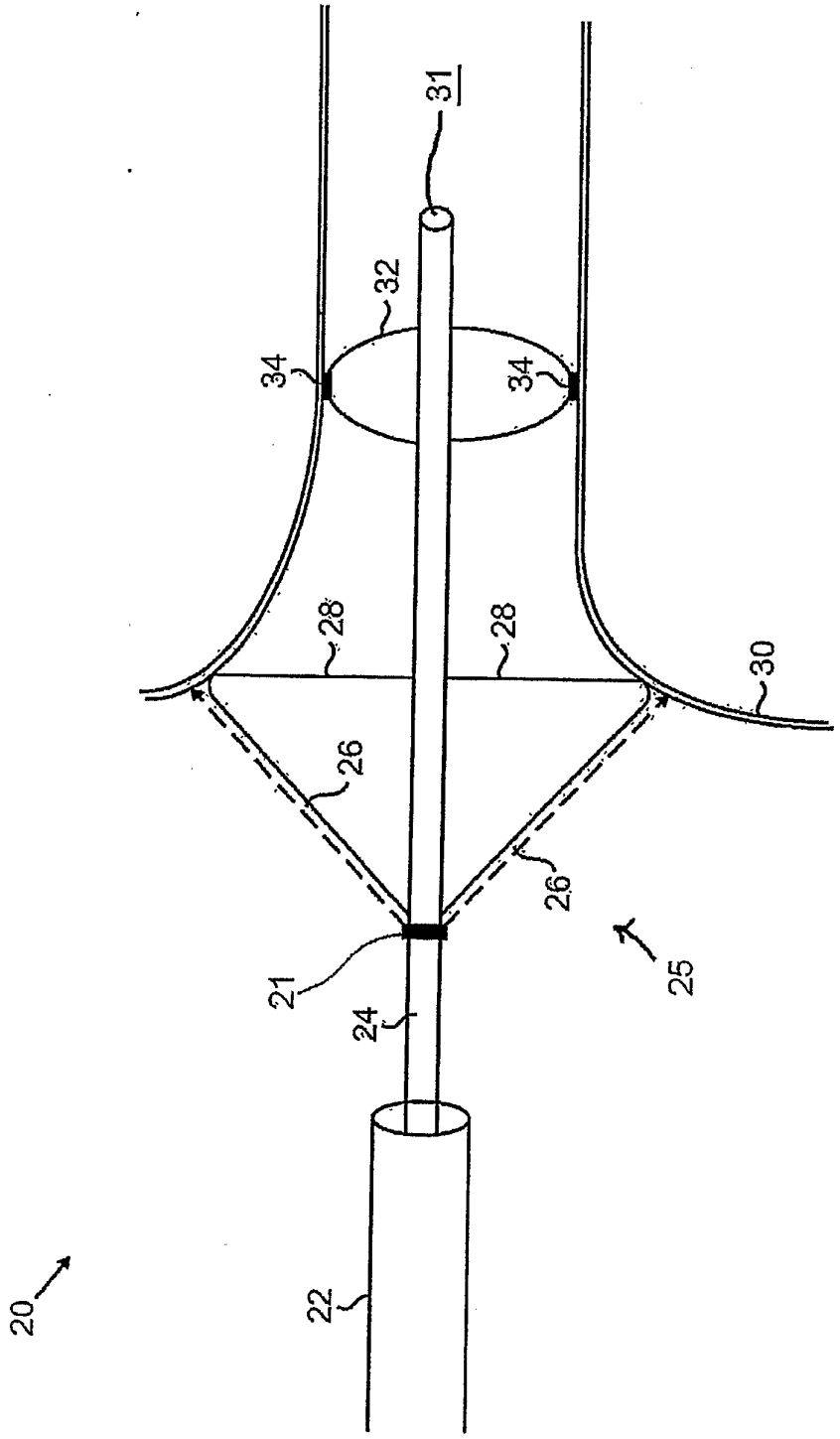

FIG. 5

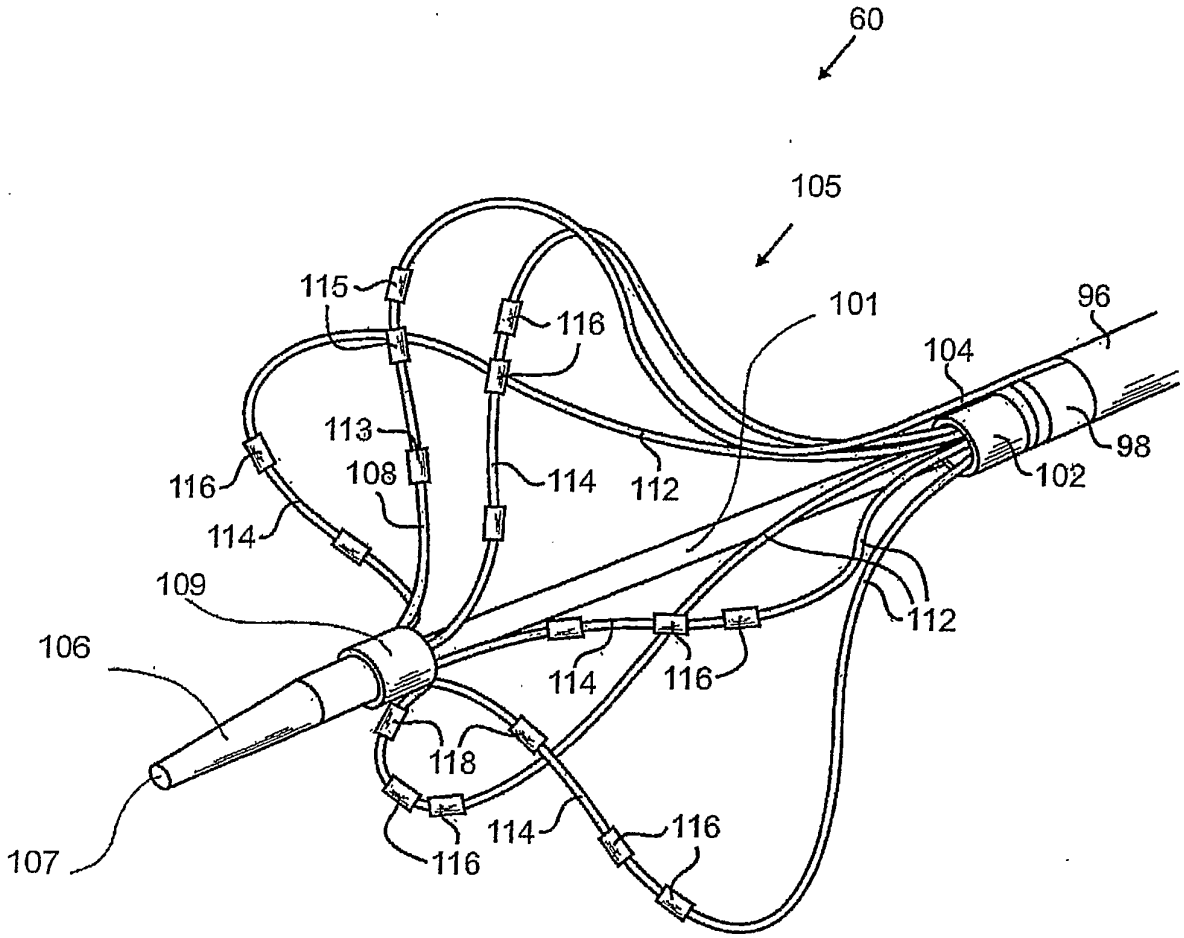
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FIG. 6

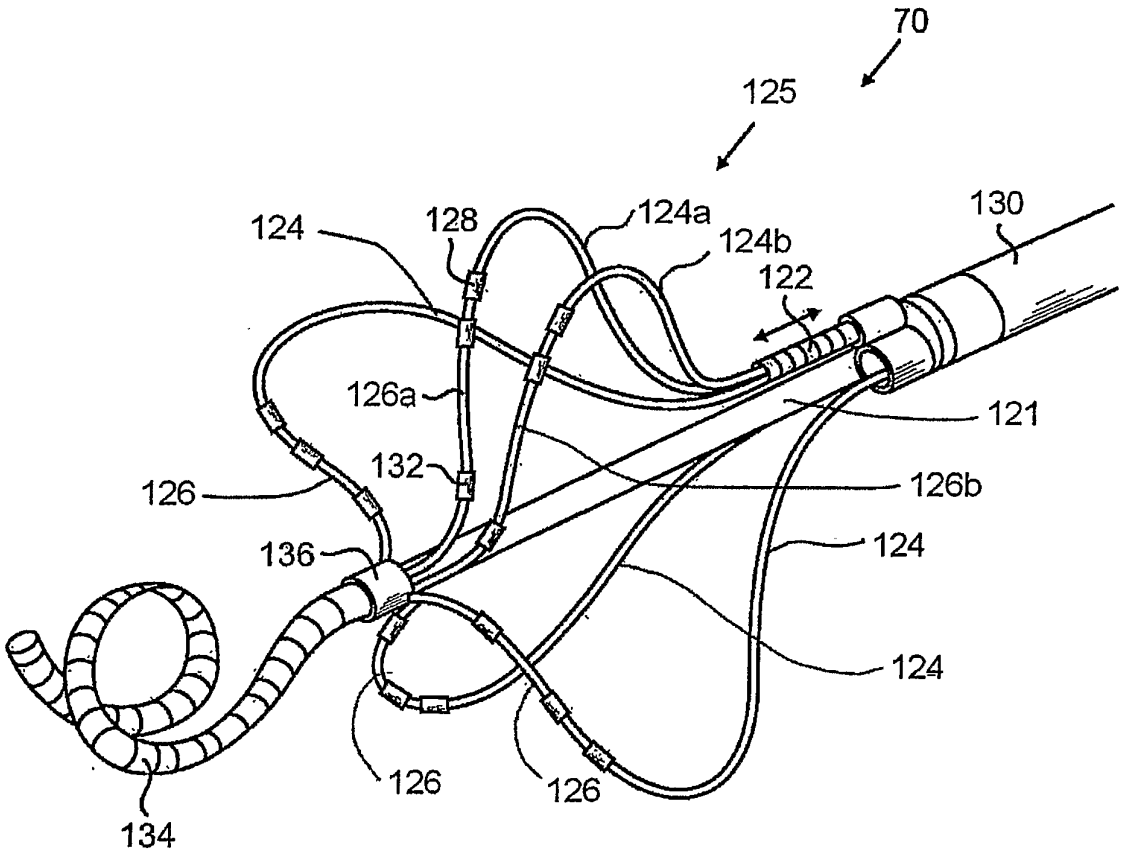
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FIG. 7

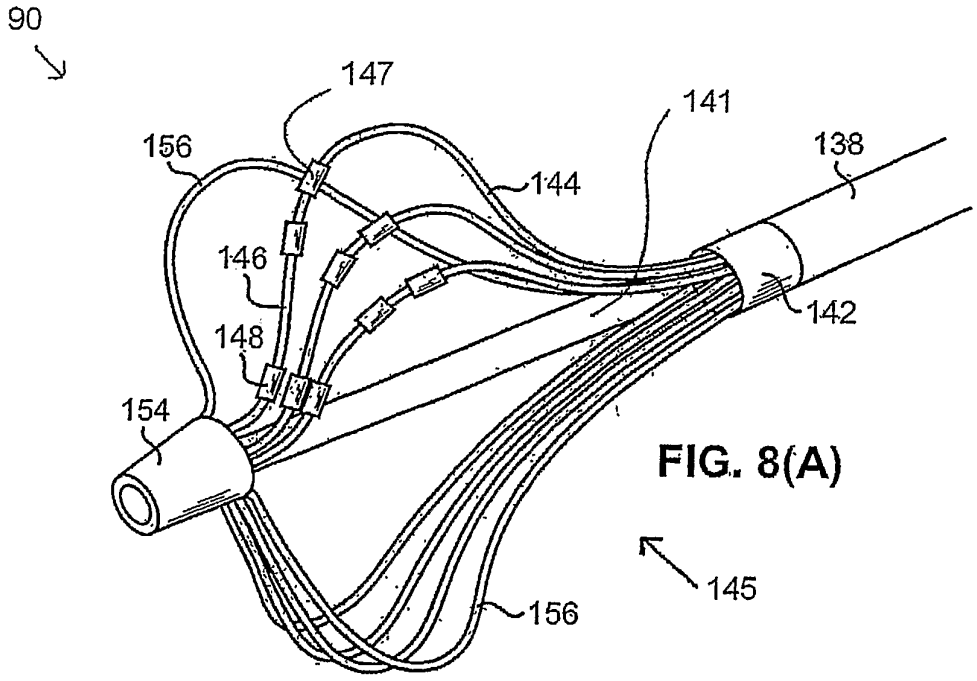


FIG. 8(A)

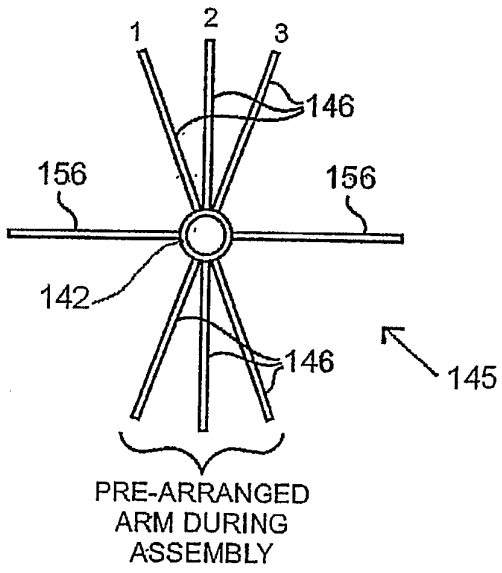


FIG. 8(B)

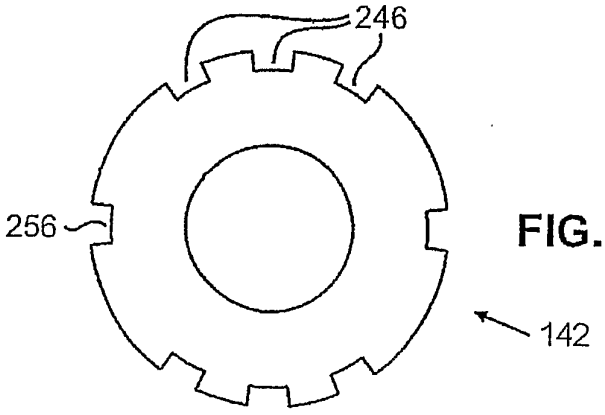


FIG. 8(C)

FIG. 9

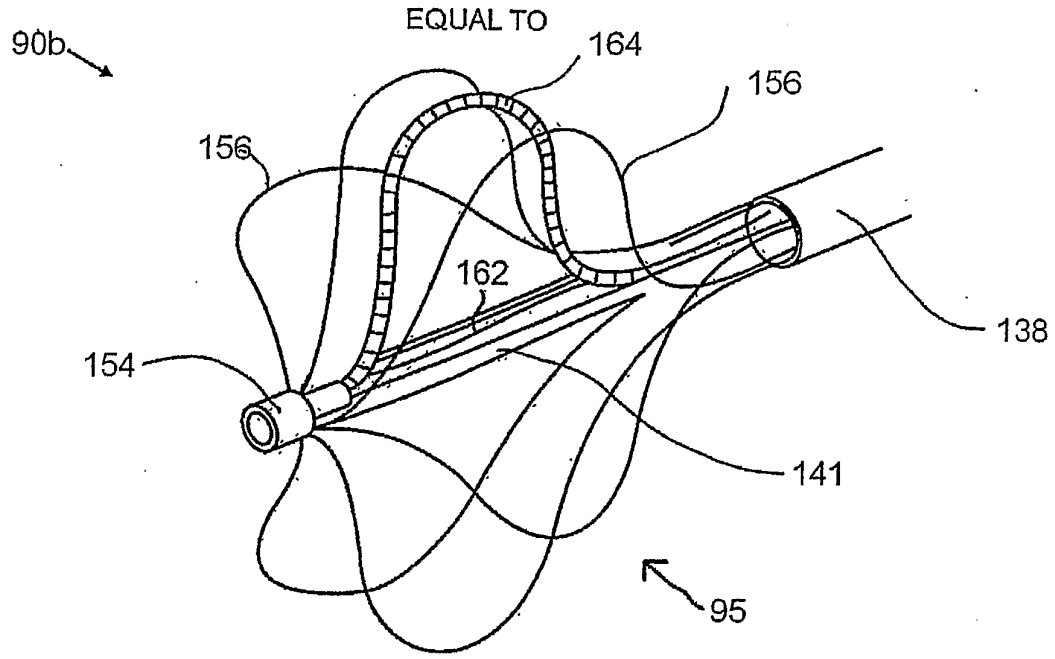


Fig. 9a

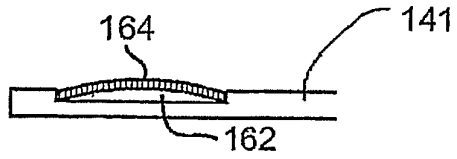
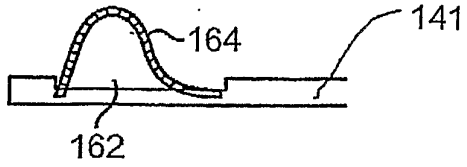


Fig. 9b



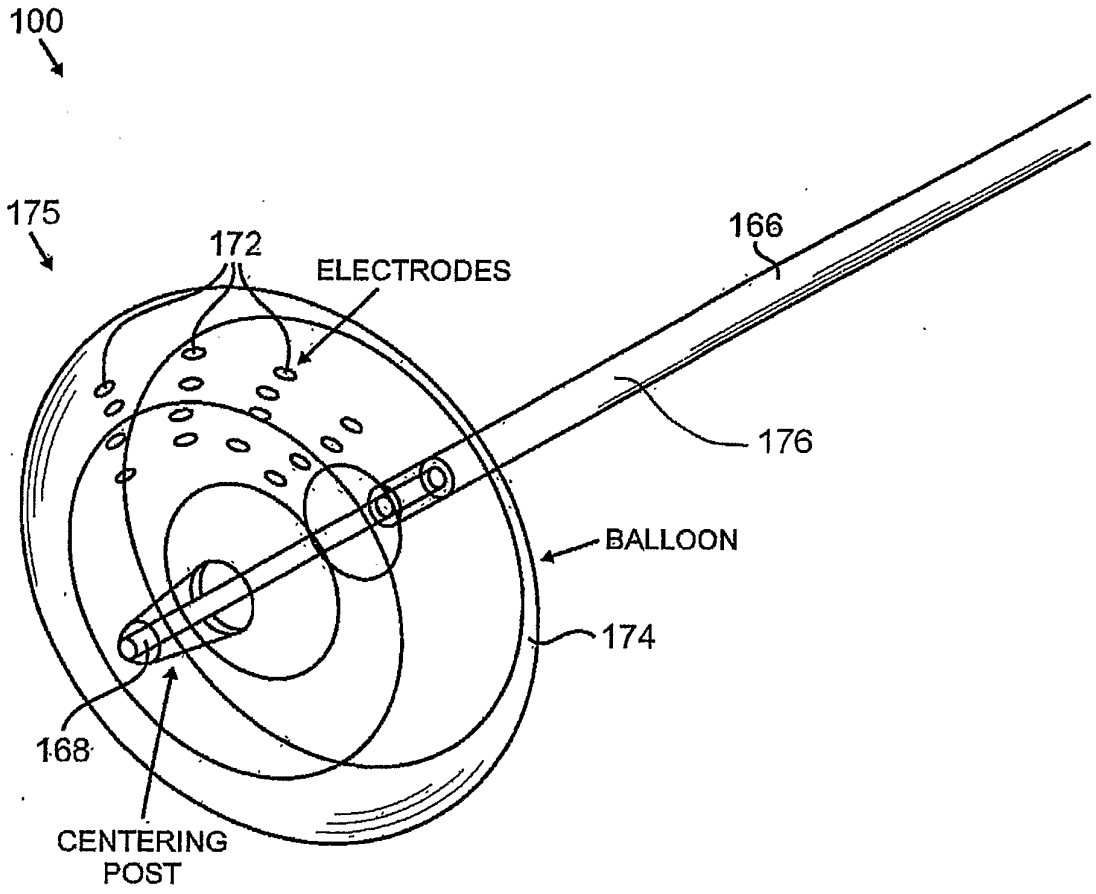

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FIG. 10

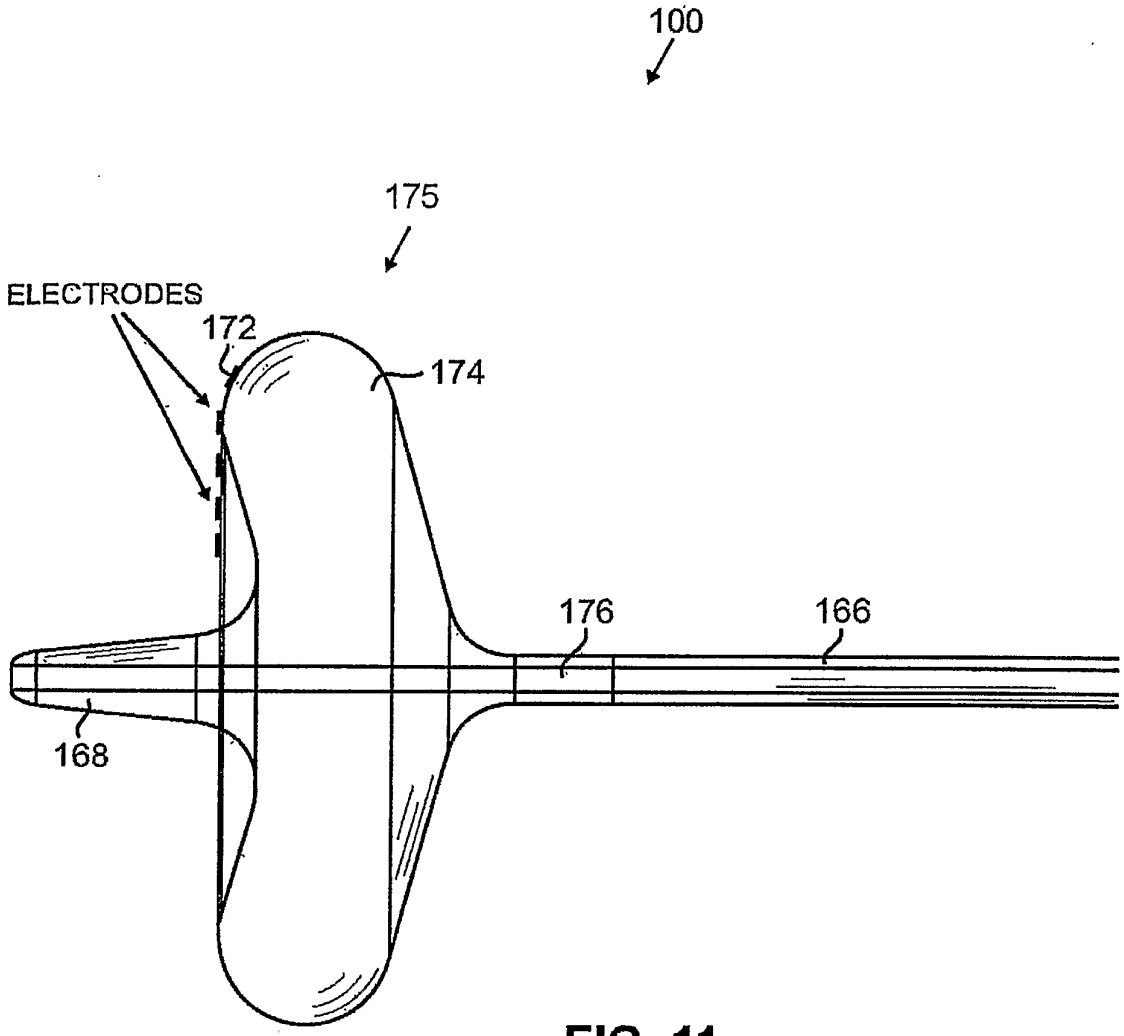


FIG. 11

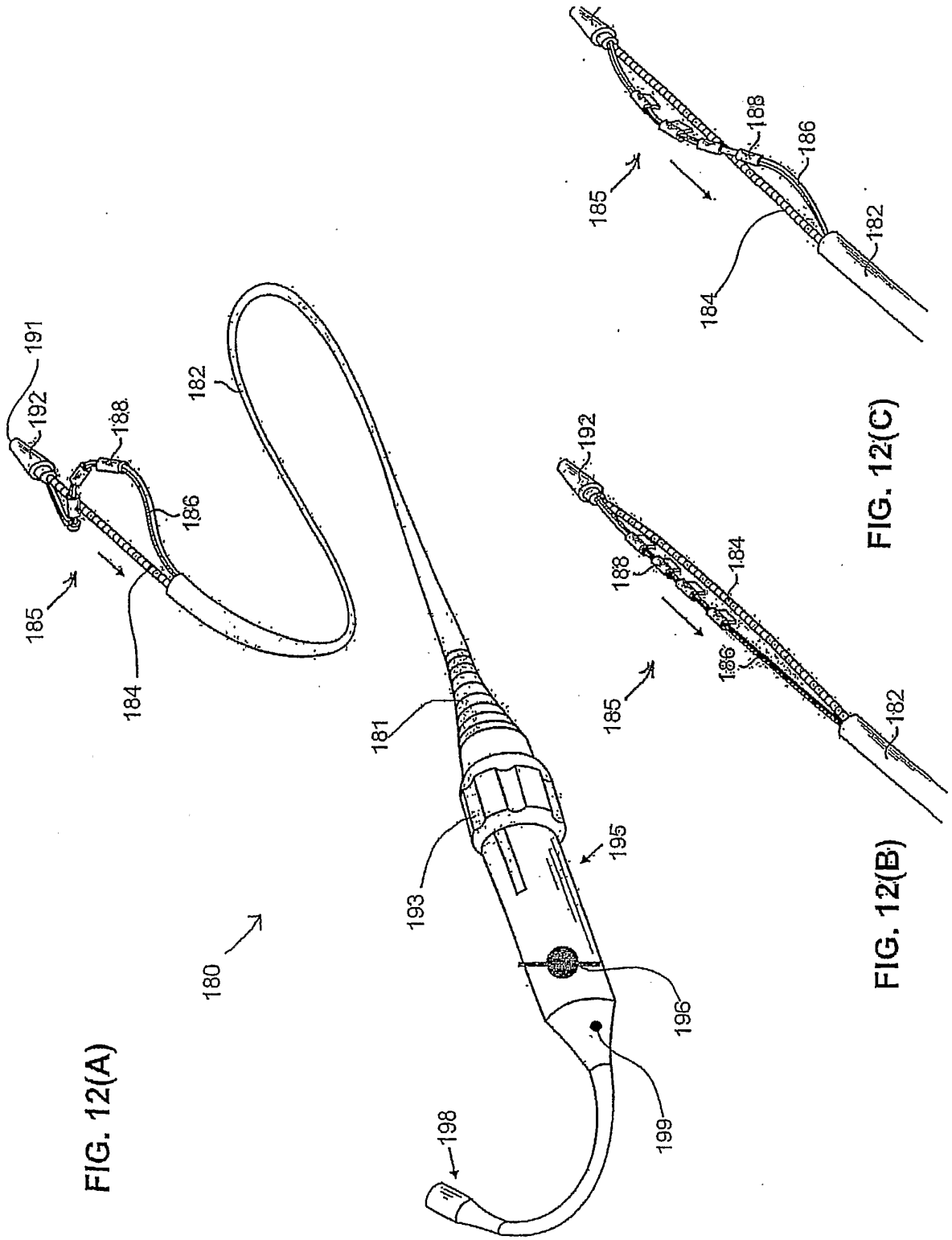


FIG. 12(A)

FIG. 12(C)

FIG. 12(B)

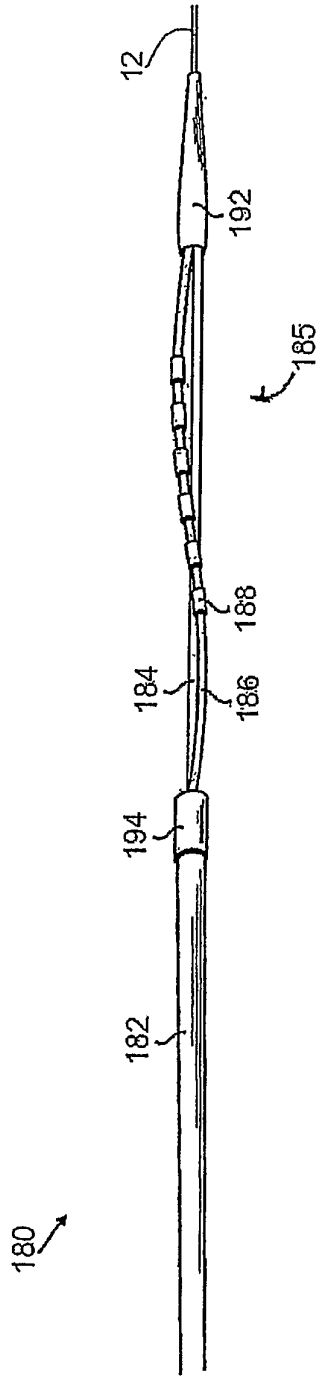


FIG. 13

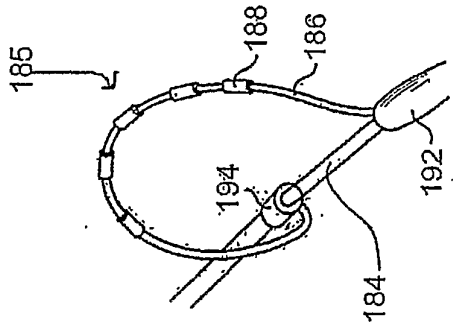


Fig. 13b

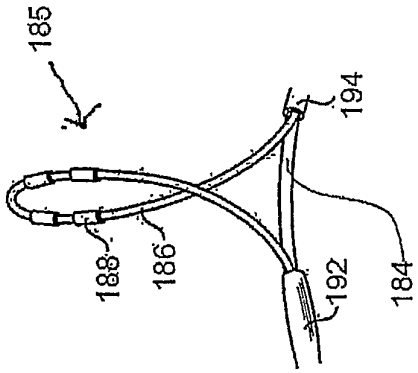
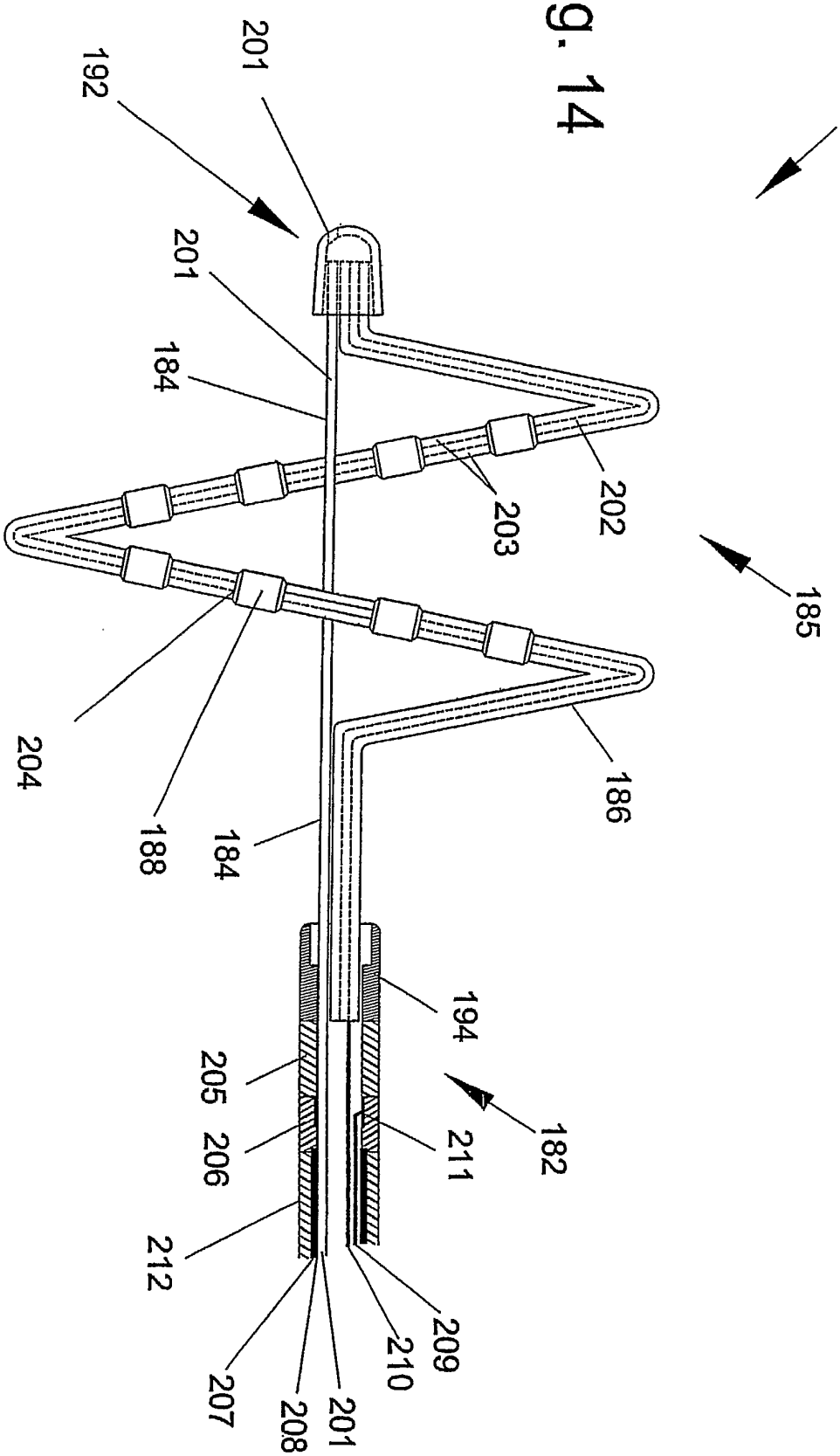


Fig. 13a

Fig. 14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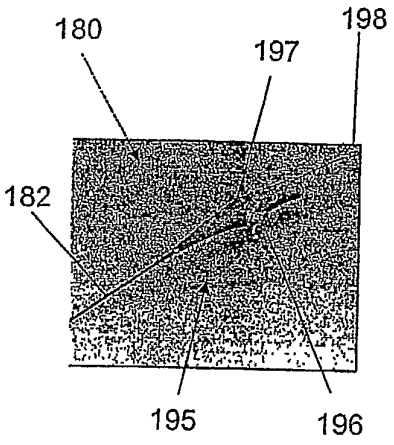

Fig. 15a

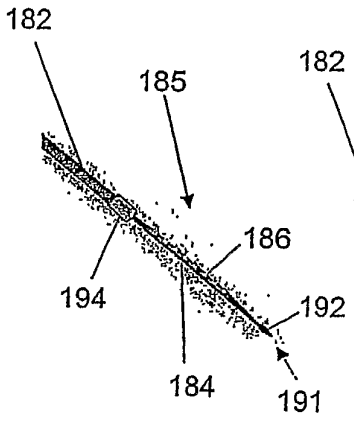

Fig. 15b

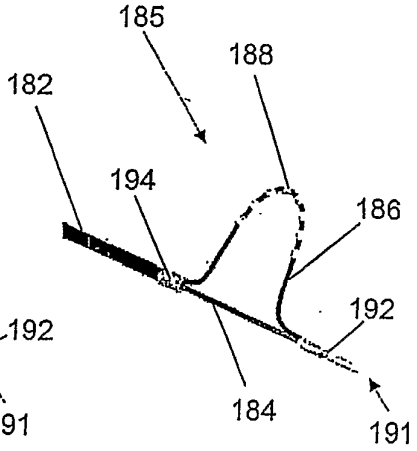

Fig. 15c

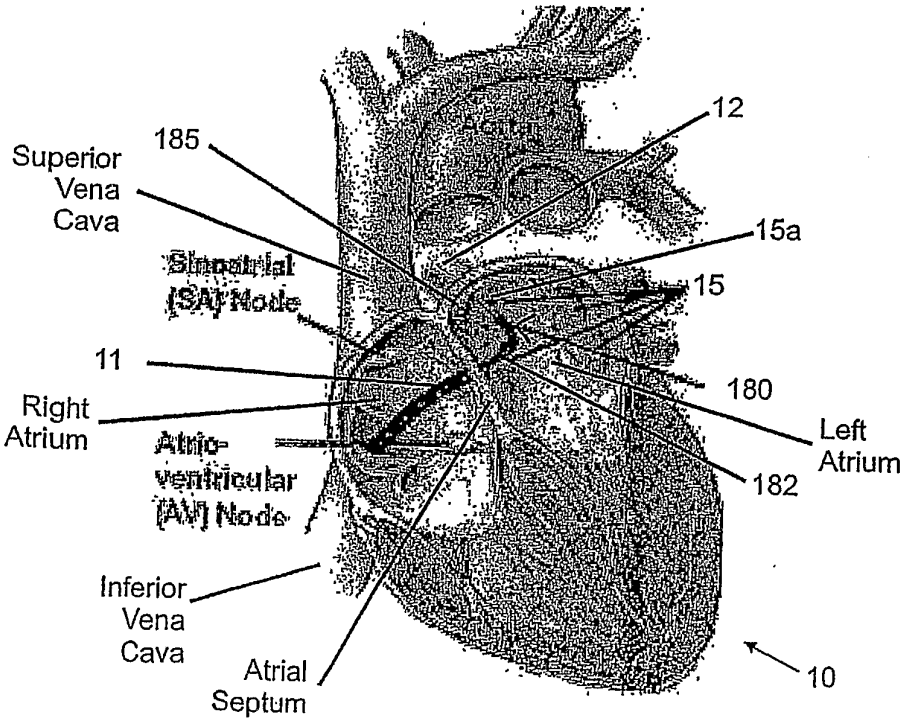

Fig. 15d

Fig. 16

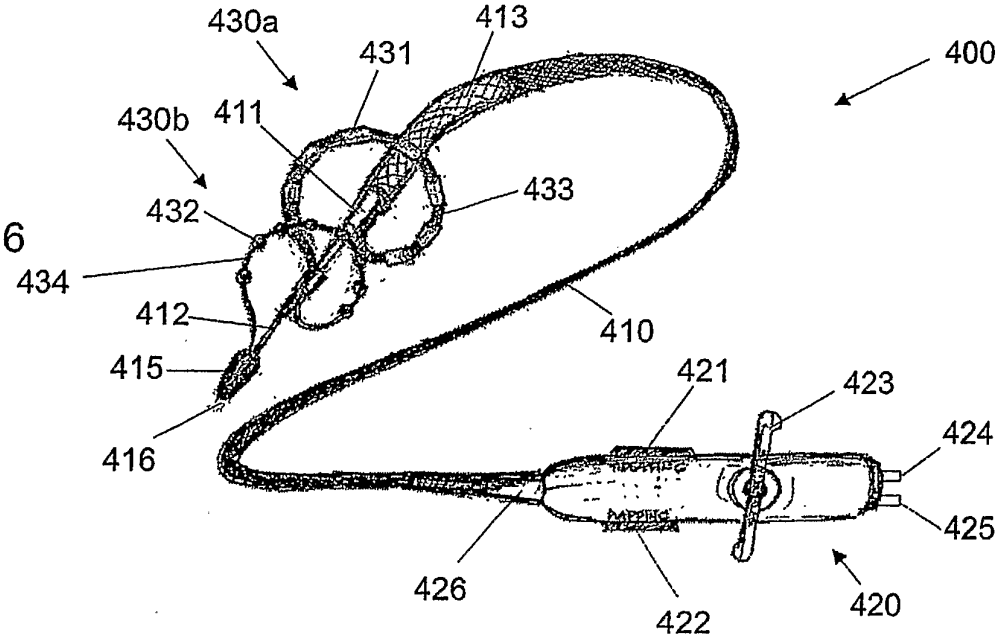

Fig. 16a

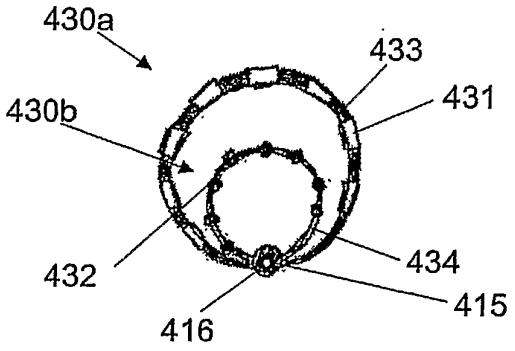

Fig. 16b

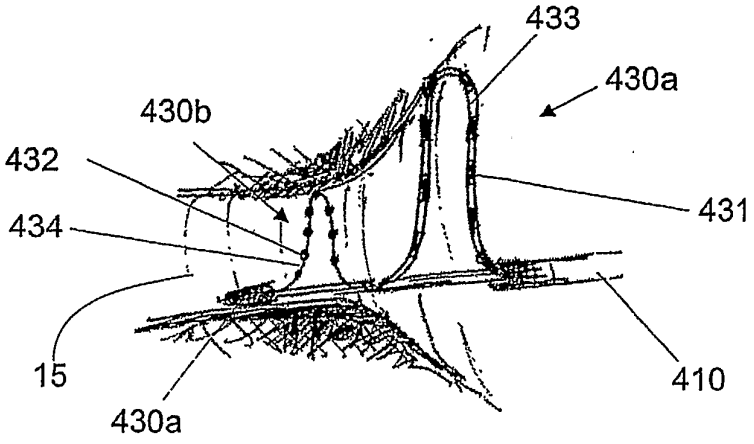

Fig. 17

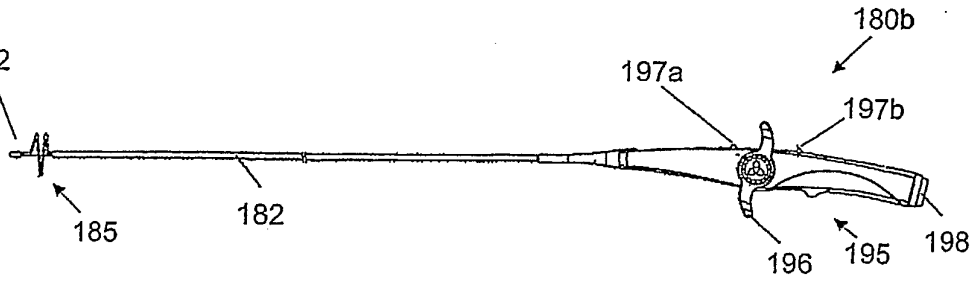

Fig. 17a

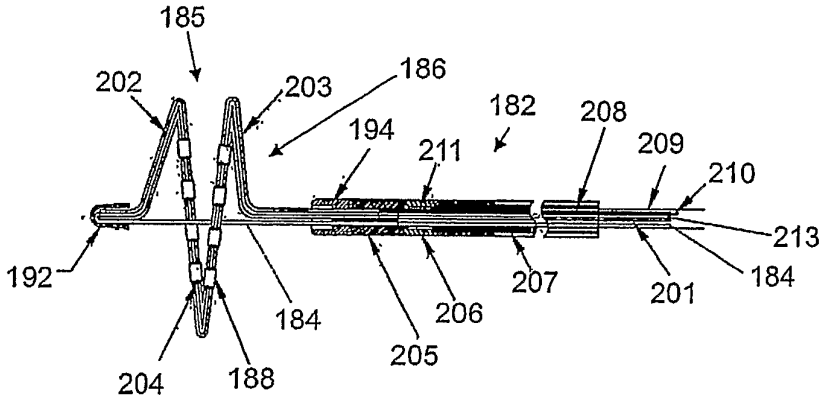

Fig. 17b

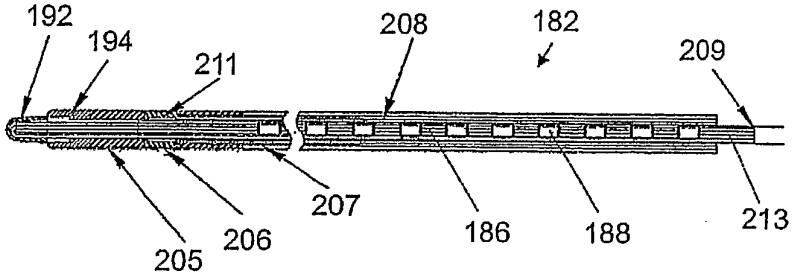

Fig. 17c