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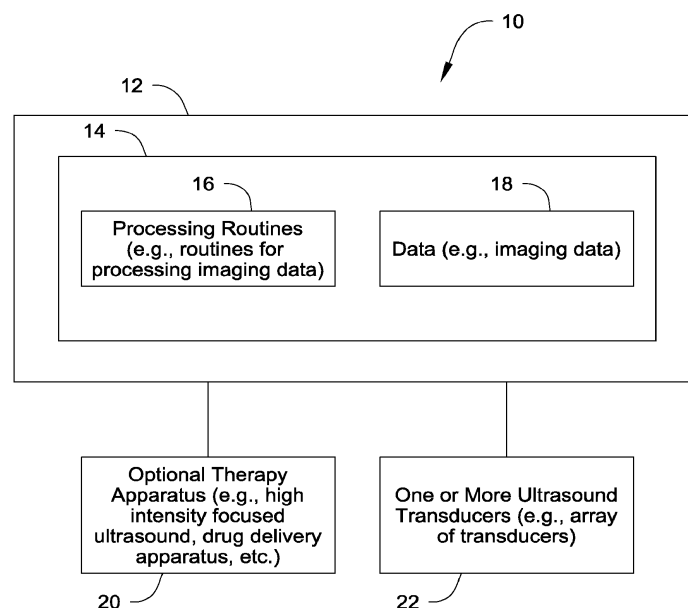
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(54) **VASCULAR CHARACTERIZATION USING ULTRASOUND IMAGING**

(57) Ultrasound methods and/or systems provide for the motion tracking of both vessel wall motion and blood flow (e.g., with use of high frame rate ultrasound pulse

echo data and speckle tracking both wall motion and flow can be tracked simultaneously).

Fig. 1





EUROPEAN SEARCH REPORT

Application Number
EP 18 19 3572

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EPO FORM 1503 03.02 (P04C01)

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A	US 6 277 075 B1 (TORP HANS GARMANN [NO] ET AL) 21 August 2001 (2001-08-21) * column 2, line 47 - line 50 *	1,8	INV. A61N7/00 A61B8/00
A	EP 0 392 743 A1 (KOWA CO [JP]) 17 October 1990 (1990-10-17) * column 3, line 21 - line 35 *	1,8	
X	US 6 618 493 B1 (TORP HANS GARMANN [NO] ET AL) 9 September 2003 (2003-09-09) * figures 1-3 * * column 2, line 43 - column 3, line 23 *	1,2,8,9	
X	GOLEMATI S ET AL: "Carotid artery wall motion estimated from b-mode ultrasound using region tracking and block matching", ULTRASOUND IN MEDICINE AND BIOL, NEW YORK, NY, US, vol. 29, no. 3, 1 March 2003 (2003-03-01), pages 387-399, XP004420633, ISSN: 0301-5629, DOI: 10.1016/S0301-5629(02)00760-3 * figures 3, 8 * * page 389, column 2, line 8 * * page 391, column 1, line 4 * * page 391, column 2, line 3 * * page 391, column 2, line 6 - line 7 *	3-5, 10-12	TECHNICAL FIELDS SEARCHED (IPC) A61B A61N
X	WO 2008/053457 A2 (KONINKL PHILIPS ELECTRONICS NV [NL]; THIELE KARL E [US]) 8 May 2008 (2008-05-08) * page 9, line 15 - line 21 *	6,7, 13-15	
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 23 August 2019	Examiner Brendemühl, S
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	



Application Number

EP 18 19 3572

CLAIMS INCURRING FEES

The present European patent application comprised at the time of filing claims for which payment was due.

☐ Only part of the claims have been paid within the prescribed time limit. The present European search report has been drawn up for those claims for which no payment was due and for those claims for which claims fees have been paid, namely claim(s):

☐ No claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for those claims for which no payment was due.

LACK OF UNITY OF INVENTION

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

see sheet B

☒ All further search fees have been paid within the fixed time limit. The present European search report has been drawn up for all claims.

☐ As all searchable claims could be searched without effort justifying an additional fee, the Search Division did not invite payment of any additional fee.

☐ Only part of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the inventions in respect of which search fees have been paid, namely claims:

☐ None of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims, namely claims:

☐ The present supplementary European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims (Rule 164 (1) EPC).

**LACK OF UNITY OF INVENTION
SHEET B**

Application Number

EP 18 19 3572

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

1. claims: 1, 2, 8, 9

frame rate

2. claims: 3-5, 10-12

speckle region entirely inside/outside vessel wall

3. claims: 6, 7, 13-15

remove reflection

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 18 19 3572

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This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

23-08-2019

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专利名称(译)	使用超声成像表征血管		
公开(公告)号	EP3495022A3	公开(公告)日	2019-10-02
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IPC分类号	A61N7/00 A61B8/00		
代理机构(译)	LATZEL , KLAUS		
优先权	61/475550 2011-04-14 US PCT/US2012/033584 2012-04-13 WO		
其他公开文献	EP3495022A2		
外部链接	Espacenet		

摘要(译)

超声方法和/或系统提供了对血管壁运动和血流两者的运动跟踪(例如,通过使用高帧频超声脉冲回波数据和斑点跟踪,可以同时追踪壁运动和血流)。

Fig. 1

