Apparatus and method for determining movements and velocities of moving objects

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Publication date:
1998

Document Version
Publisher's PDF, also known as Version of record

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International Bureau

INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification 6 : G01B 13/00, 5/00, A61B 8/06

A3

(11) International Publication Number: **WO 98/00719**

(43) International Publication Date: 8 January 1998 (08.01.98)

(21) International Application Number: PCT/DK97/00287

(22) International Filing Date: 1 July 1997 (01.07.97)

(30) Priority Data:
60/021,101 2 July 1996 (02.07.96) US

(60) Parent Application or Grant
(63) Related by Continuation
US 60/021,101 (CON)
Filed on 2 July 1996 (02.07.96)

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(81) Designated States: AL, AM, AT, AT (Utility model), AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, CZ (Utility model), DE, DE (Utility model), DK, DK (Utility model), EE, EE (Utility model), ES, FI, FI (Utility model), GB, GE, GH, HU, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SK (Utility model), SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, ARIPO patent (GH, KE, LS, MW, SD, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG).

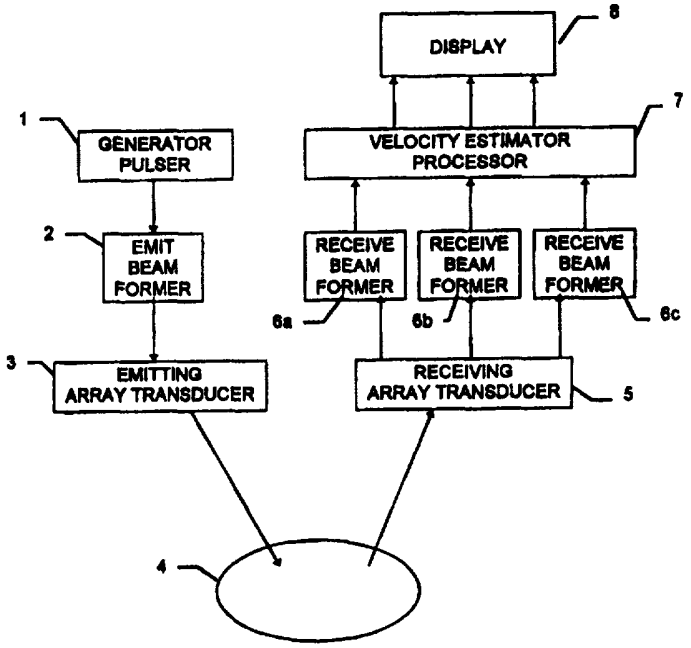
Published
With international search report.
Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.

(88) Date of publication of the international search report:
12 March 1998 (12.03.98)

(54) Title: APPARATUS AND METHOD FOR DETERMINING MOVEMENTS AND VELOCITIES OF MOVING OBJECTS

(57) Abstract

With an apparatus according to the invention it is possible to detect an object's velocity transverse to the direction of propagation of an interacting field. Such transverse movement is detected by applying a field that oscillates spatially in the transverse direction. The method used in the apparatus is applicable where wave energy is used to sense or detect an object by its scattering properties when using either sound waves or electromagnetic waves. The movement can be detected according to the field properties. The field represented by the sampling pulse must feature a spatial oscillation in the directions, where the velocity components are of interest. Such a transversely oscillating field is e.g. generated by using apodization on individual transducer elements and a special focusing scheme. The apparatus uses waves of either sound or electro-magnetic radiation. The temporal characteristics are determined by the setup of the emitter (1). The spatial characteristics are determined by the transmitter array configuration (3) and the receiver array configuration (5) and the respective beam formers (2) and (6a, 6b, 6c). The transmit array consists of *N* elements and the receive array consists of *M* elements. The transmit beam former and the receive beam former are configured to obtain the spatially oscillating field. The signal received from the interacting objects (4) is processed by the velocity estimator processor (7) for calculation of the velocity vector components by estimating the shift in position as a function of time and the velocity is derived herefrom.



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INTERNATIONAL SEARCH REPORT

International application No.
PCT/DK 97/00287

A. CLASSIFICATION OF SUBJECT MATTER

IPC6: G01B 13/00, G01B 5/00, A61B 8/06
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)

IPC6: A61B, G01P

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

SE,DK,FI,NO classes as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

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[X] Further documents are listed in the continuation of Box C. [X] See patent family annex.

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Date of the actual completion of the international search	Date of mailing of the international search report
26 January 1998	26.01.98
Name and mailing address of the ISA/ Swedish Patent Office Box 5055, S-102 42 STOCKHOLM Facsimile No. +46 8 666 02 86	Authorized officer Åsa Lindén Telephone No. +46 8 782 25 00

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International application No.
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