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

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
7 February 2002 (07.02.2002)

PCT

(10) International Publication Number
WO 02/10794 A2

(51) International Patent Classification[7]: G01S 7/00

(21) International Application Number: PCT/US01/23307

(22) International Filing Date: 24 July 2001 (24.07.2001)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:

60/221,314	28 July 2000 (28.07.2000)	US
09/885,621	20 June 2001 (20.06.2001)	US

(71) Applicant: HONEYWELL INTERNATIONAL INC. [US/US]; 101 Columbia Avenue, P.O. Box 2245, Morristown, NJ 07960 (US).

(72) Inventor: MILLER, Ronald, J.; 5516 Estrellita del Norte, Albuquerque, NM 87111 (US).

(74) Agents: CRISS, Roger, H. et al.; Honeywell International Inc., 101 Columbia Avenue, P.O. Box 2245, Morristown, NJ 07960 (US).

(81) Designated States *(national)*: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW.

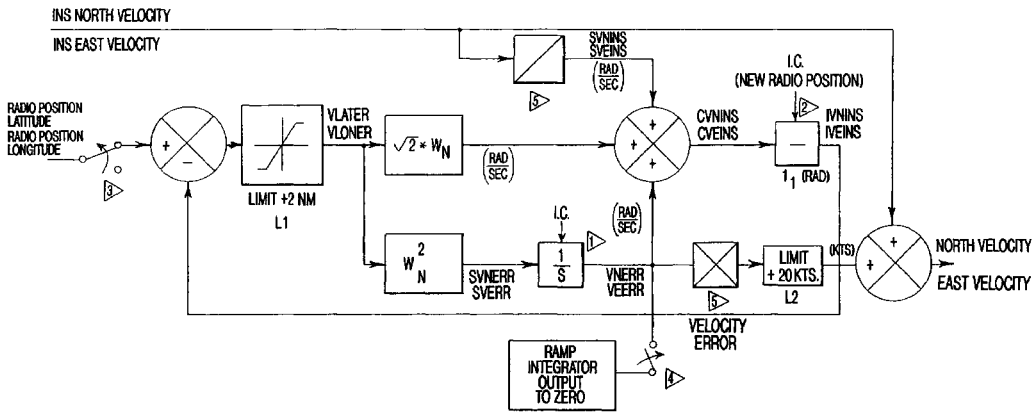
(84) Designated States *(regional)*: ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

— *without international search report and to be republished upon receipt of that report*

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: SECOND ORDER COMPLEMENTARY GLOBAL POSITIONING SYSTEM/INERTIAL NAVIGATION SYSTEM BLENDING FILTER



(57) Abstract: A second-order filter that blends accurate position information from a one source, and velocity information from another source, both suitably scaled, in a second-order complementary filter. The filter is arranged such that an internal integrator (106) maintains a value that represents the difference in the rate of change of the accurate position information, and the velocity input of the other source. This velocity difference is applied to another integrator (114) outside the filter, whose initial condition is the position error between the two sources to the second order filter. The output of this latter integrator (114) is a correction signal that grows at a rate equal and opposite to the rate of error built-up of position data from the source whose velocity is used in the second order filter. This correction signal is summed (120) with the original position signal. In addition, the output of the second order filter may be used as a highly accurate position signal.

WO 02/10794 A2