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(21) International Application Number: PCT/US96/09119 (22) International Filing Date: 6 June 1996 (06.06.96) (30) Priority Data: 08/483,200 7 June 1995 (07.06.95) US (71) Applicant: WEST VIRGINIA UNIVERSITY [US/US]; P.O. Box 6101, Morgantown, WV 26506 (US). (72) Inventors: CRAVEN, Robert, P., M.; 540 Herman Avenue, Star City, WV 26504 (US). PRINKEY, Michael, T.; Star Route, Box 10A, Normalville, PA 15469 (US). SMITH, James, E.; Route 7, Box 145, Morgantown, WV 26505 (US). (74) Agent: HOUSER, Kirk, D.; Eckert Seamans Cherin & Mellott, 42nd floor, 600 Grant Street, Pittsburgh, PA 15219 (US).	(81) Designated States: AL, AM, AT, AU, AZ, BB, BG, BR, BY, CA, CH, CN, CZ, DE, DK, EE, ES, FI, GB, GE, HU, IL, IS, JP, KE, KG, KP, KR, KZ, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, TJ, TM, TR, TT, UA, UG, UZ, VN, ARIPO patent (KE, LS, MW, SD, SZ, UG), 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 <i>With international search report.</i> REPLACED SHEETS SG ☒ Description : paged <u>03</u> to paged <u>41</u> ☒ Claim(s) : paged <u>42</u> to paged <u>54</u> ☐ Drawing(s) : paged to paged ☐ Abstract : paged to paged	
(54) Title: CONTRAFOUND ANTENNA (57) Abstract An antenna is disclosed that has windings that are contrawound in segments on a toroid form and that have opposed currents on selected segments. An antenna is disclosed that has one or more insulated conductor circuits with windings that are contrawound around and over a surface, such as a spherical surface, a generally spherical surface, a multiply connected surface, a toroidal surface, or a hemispherical surface. The insulated conductor circuits may form one or more endless conductive paths around and over the surface. The windings may have a helical pattern, a generally helical pattern, a partially helical pattern, a poloidal peripheral pattern or may be constructed from a slotted conductor on the toroid. Poloidal loop winds are disclosed with a toroid hub on a toroid that has two plates that provides a capacitive feed to the loops, which are selectively connected to one of the plates.  		