RTMP'S COPY

9703295-7

NO COVERING LETTER 06/10/97

PCT WORLD INTELLECTUAL PROPERTY ORGANIZATION
International Bureau

INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification 6 : G06F 17/50, 19/00 — A1

(11) International Publication Number: WO 96/25716

(43) International Publication Date: 22 August 1996 (22.08.96)

(21) International Application Number: PCT/US96/02007

(22) International Filing Date: 14 February 1996 (14.02.96)

(30) Priority Data: 08/388,580 14 February 1995 (14.02.95) US

(71)(72) Applicant and Inventor: ST. VILLE, James, A. [US/US]; Suite 200, 2500 North 24th Street, Phoenix, AZ 85008 (US).

(74) Agents: SHEA, Michael, J. et al.; Banner & Allegretti, Ltd., 11th floor, 1001 G Street, N.W., Washington, DC 20001 (US).

(81) Designated States: AL, AM, AT, AU, BB, BG, BR, BY, CA, CH, CN, CZ, DE, DK, EE, ES, FI, GB, GE, HU, 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, TT, UA, UG, UZ, VN, ARIPO patent (KE, LS, MW, SD, SZ, UG), Eurasian patent (AZ, BY, KG, KZ, RU, TJ, TM), European patent (AT, BE, CH, DE, DK, ES, 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.

(54) Title: METHOD AND APPARATUS FOR MANUFACTURING OBJECTS HAVING OPTIMIZED RESPONSE CHARACTERISTICS

(57) Abstract

A method for manufacturing an object having a potential {x} generated in response to a field {f} applied thereto is provided. The method includes the step of designing (801) a geometric model of the object. A computerized mathematical model of the object is generated (802) by discretizing the geometric model of the object into a plurality of finite elements and defining nodes at boundaries of the elements, wherein values of the field {f} and potential {x} are specified at the nodes. A material property matrix [k] is then calculated base on the relationship {f} = [k] {x}. Material property coefficients are then extracted from the material property matrix [k] for each finite element in the computerized mathematical model and the extracted material property coefficients are compared (804) to material property coefficients for known materials to match the extracted material property coefficients to the material property coefficients for known materials. Manufacturing parameters corresponding to the matched material property coefficients are then determined (805).

