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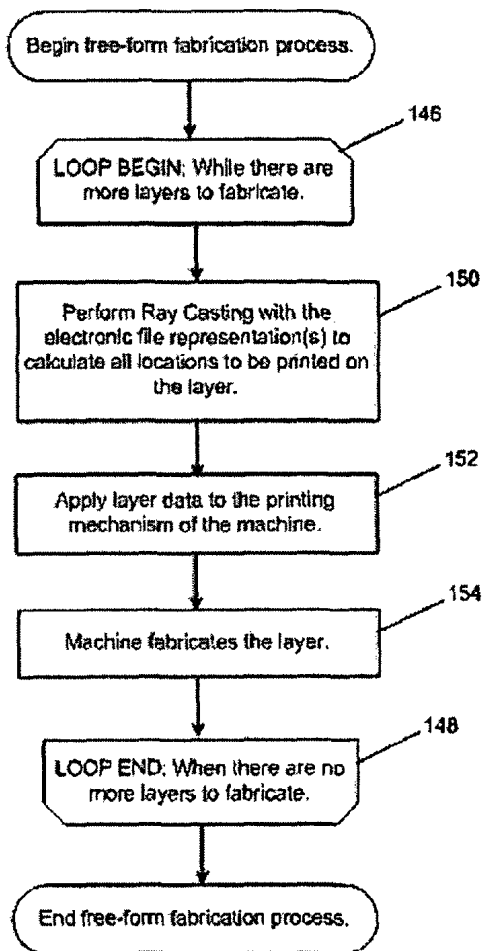
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[Continued on next page]

(54) Title: THREE-DIMENSIONAL DATA EXTRACTION USING RAY CASTING



(57) Abstract: Methods are provided for solid free-form fabrication of an article without using a slice stack file. These apply ray casting a number of times to an electronic representation of the article to create data objects for use directly as printing instructions or which are convertible into printing instructions. The data objects may be utilized as they are generated or after they are created for a portion or all of the article. After utilization, the data objects may be discarded or stored for later use. Layer-specific layer thickness and other-direction resolution parameters may be input and utilized in selecting the number of rays to be cast, their origination points, and their directions, thus permitting controllable variation in detail precision in any direction. Error diffusion techniques may be used to improve fabricated part integrity. Improved intermachine portability is provided. Method, system, code, and media claims are included.

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IPC: **B29C 41/02( 2006.01);G06F 19/00( 2006.01)**

USPC: 264/308;425/375;700/119

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)

U.S. : 264/308; 425/375; 700/119

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

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

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A, T	US 2006/0155418 A1 (BRADBURY et al) 13 July 2006 (13.07.2006).	1-32

Further documents are listed in the continuation of Box C.

See patent family annex.

\* Special categories of cited documents:

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"O" document referring to an oral disclosure, use, exhibition or other means	"&" document member of the same patent family
"P" document published prior to the international filing date but later than the priority date claimed	

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