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**Levanon et al.**

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(54) **ADAPTIVE QUADTREE-BASED SCALABLE SURFACE RENDERING**

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(\* ) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 246 days.

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(51) **Int. Cl.**  
**G06T 15/00** (2006.01)

(52) **U.S. Cl.** ..... **345/428**; 345/423; 345/419

(58) **Field of Classification Search** ..... 345/428, 345/426-427, 419-420, 423

See application file for complete search history.

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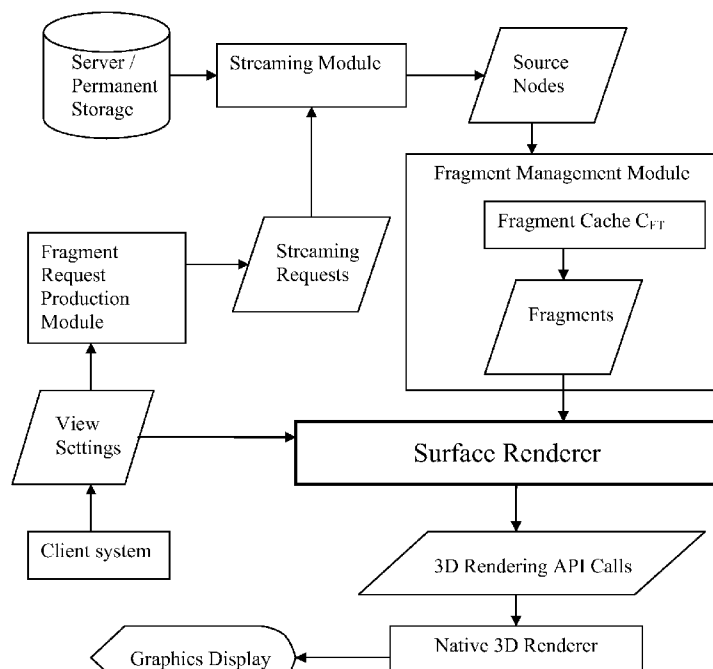
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(57) **ABSTRACT**

A 3D scalable surface renderer allows efficient real-time 3D rendering of high-detail smooth surfaces. The renderer is exceptionally effective with software rendering and low-end weaker graphics accelerators, and provides excellent visible quality per the amount of polygons used, while retaining low CPU processing overhead and high efficiency on graphics hardware. The 3D scalable surface renderer provides real time rendering of extremely detailed smooth surfaces with view-dependent tessellation using an improved level of detail approach.

**18 Claims, 9 Drawing Sheets**



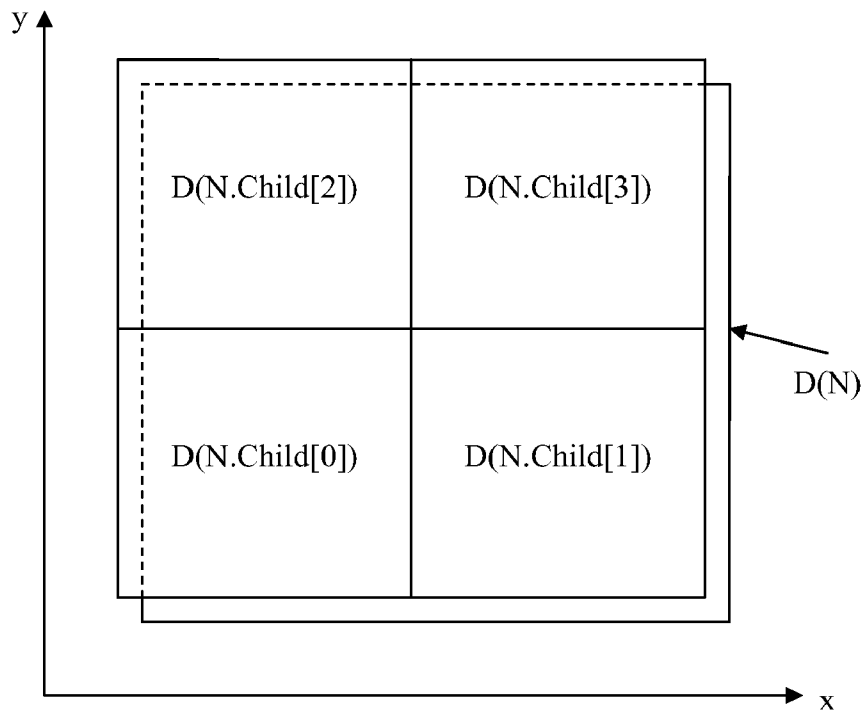


FIGURE 1

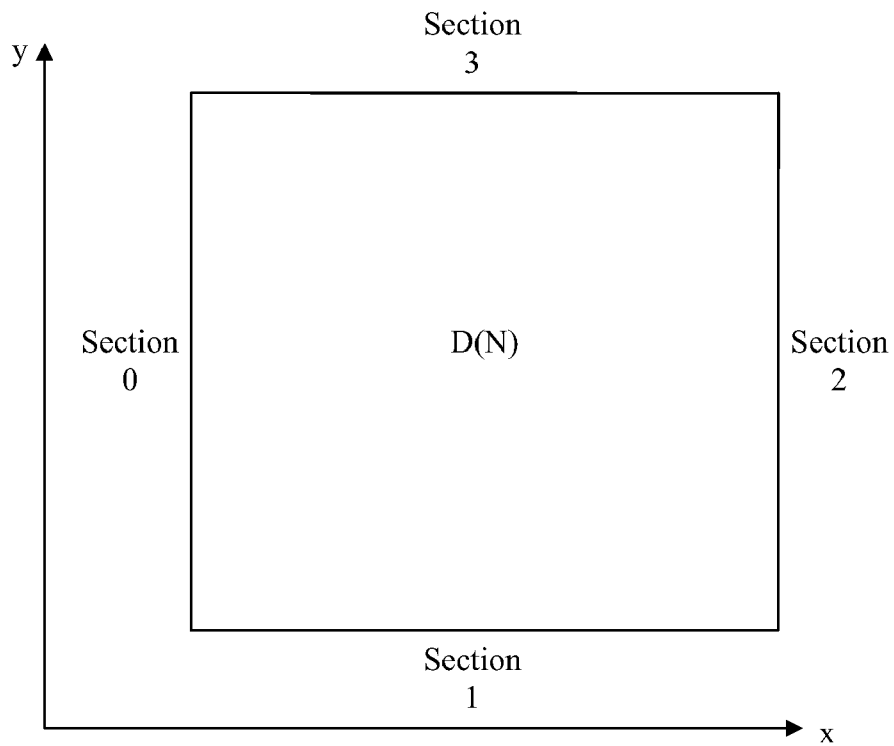


FIGURE 2

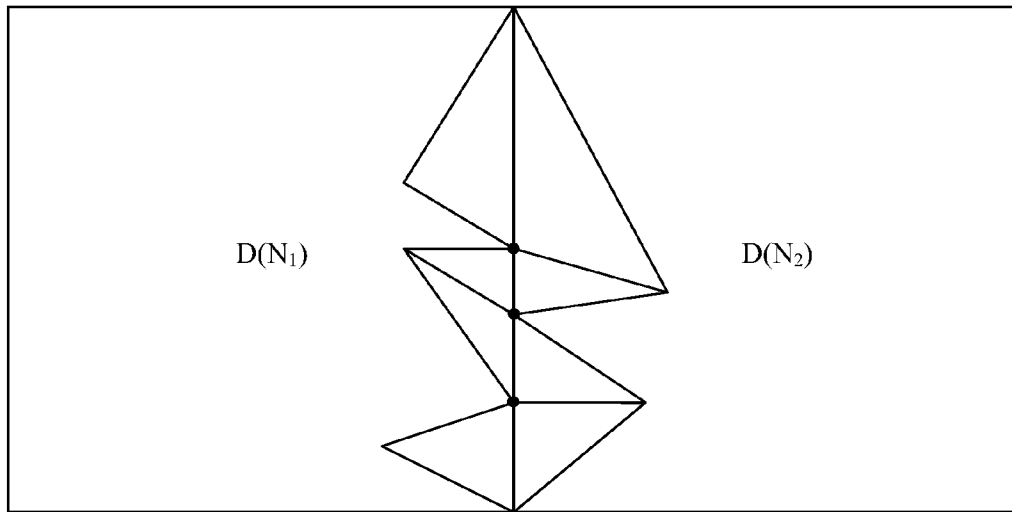


FIGURE 3a

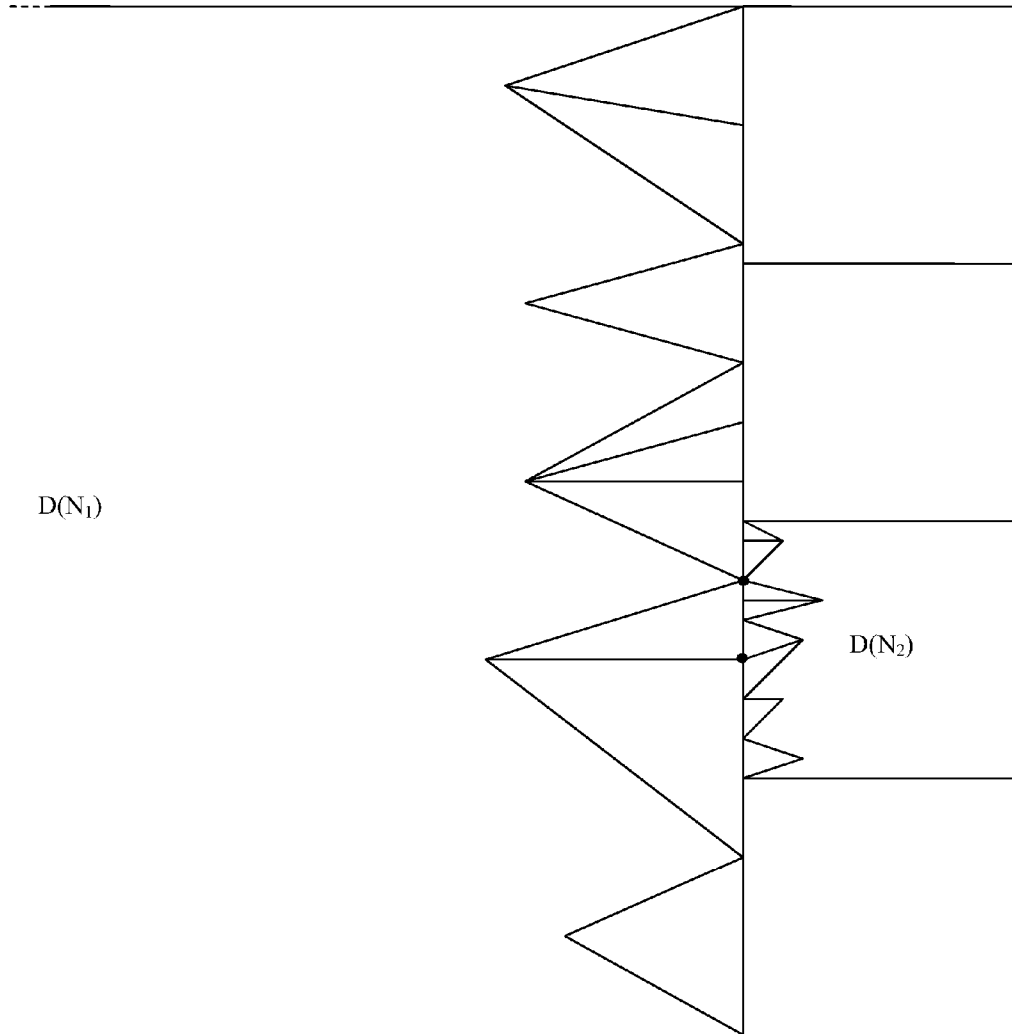
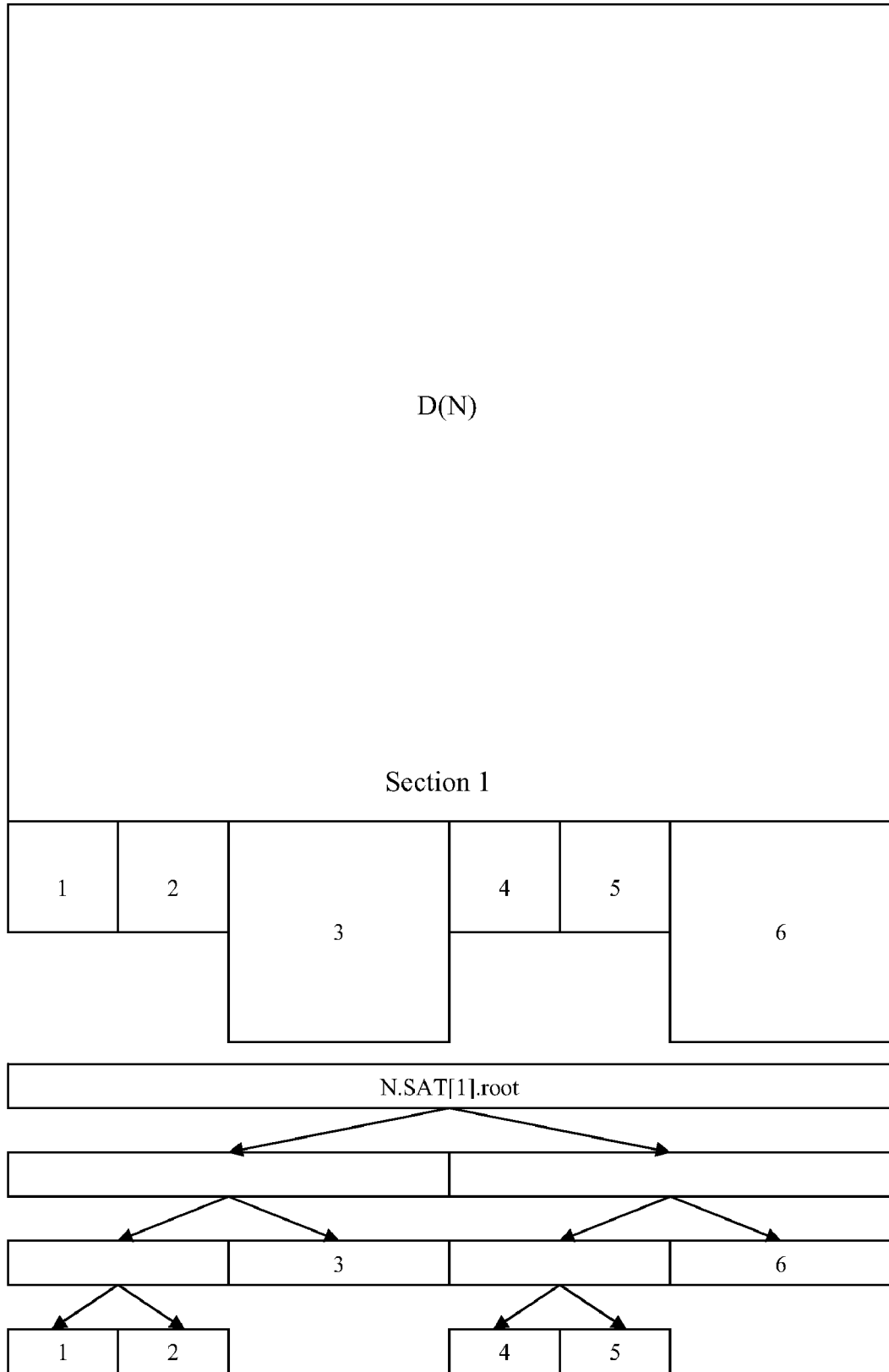


FIGURE 3b



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