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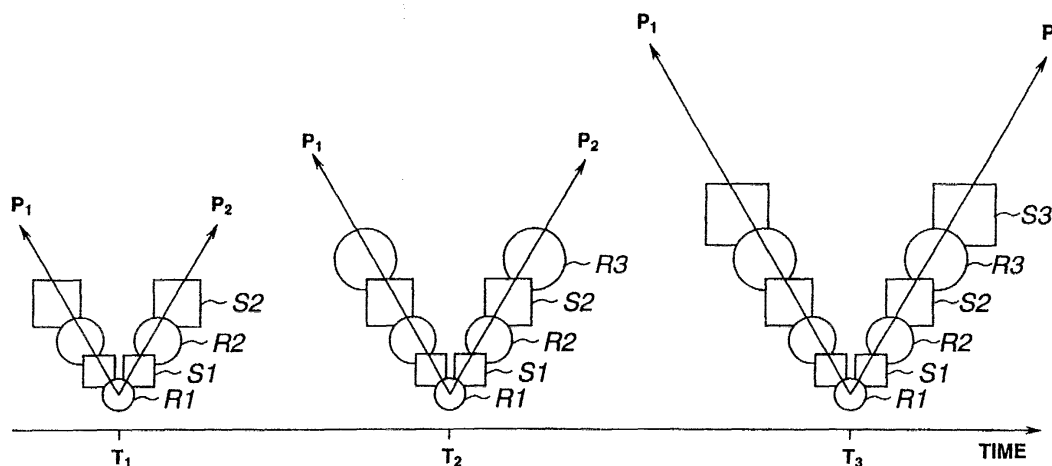
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(54) **Image processing device and information recording medium**

(57) An image processing device for realizing more realistic pictures of explosions in video game devices and the like. Objects displaying such pictures of explosions are formed of spherical polygons (R1, R2, R3,...) and planar polygons (S1, S2, S3,...). Pictures of explo-

sions are realized by alternately arranging these spherical polygons and planar polygons with the lapse in time. Preferably, pictures of polygons are realized by arranging the spherical polygons in layers on the boundary of the planar polygons.



**FIG.5A**

**FIG.5B**

**FIG.5C**



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# EUROPEAN SEARCH REPORT

Application Number  
EP 99 30 6293

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
E	EP 1 002 559 A (SEGA ENTERPRISES KK) 24 May 2000 (2000-05-24) * paragraph [0145]; figure 27 *	1	G06T15/70
X	SCHAUFLER G: "Exploiting frame-to-frame coherence in a virtual reality system" VIRTUAL REALITY ANNUAL INTERNATIONAL SYMPOSIUM, 1996., PROCEEDINGS OF THE IEEE 1996 SANTA CLARA, CA, USA 30 MARCH-3 APRIL 1996, LOS ALAMITOS, CA, USA, IEEE COMPUT. SOC, US, 30 March 1996 (1996-03-30), pages 95-102, XP010157052 ISBN: 0-8186-7295-1	1	
A	* section 4. *	2-6	
A	* abstract *		
A	NISHINO H ET AL: "A 3D VIRTUAL ENVIRONMENT FOR CREATING NEW FIREWORKS" VIRTUAL REALITY SOFTWARE AND TECHNOLOGY. PROCEEDINGS OF THE VRST CONFERENCE,, 1 July 1996 (1996-07-01), pages 43-50, XP001023489 * abstract *	1-6	
A	* section 5.1.2 Particle System *		
A	* page 48 - page 49 *		
A	WO 97 41535 A (SOUTHWEST RES INST) 6 November 1997 (1997-11-06) * page 33, line 32 - page 34, line 13 *	1-6	
A	EP 0 778 548 A (SEGA ENTERPRISES KK) 11 June 1997 (1997-06-11) * column 16, line 2-53; figures 15,16 *	1-6	
-The present search report has been drawn up for all claims			
Place of search MUNICH		Date of completion of the search 14 October 2002	Examiner Meinl, W
CATEGORY OF CITED DOCUMENTS X: particularly relevant if taken alone Y: particularly relevant if combined with another document of the same category A: technological background O: non-written disclosure P: intermediate document		T: theory or principle underlying the invention E: earlier patent document, but published on, or after the filing date D: document cited in the application L: document cited for other reasons &: member of the same patent family, corresponding document	

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Application Number  
EP 99 30 6293

### CLAIMS INCURRING FEES

The present European patent application comprised at the time of filing more than ten claims.

- ☐ Only part of the claims have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims and for those claims for which claims fees have been paid, namely claim(s):
- ☐ No claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims.

### LACK OF UNITY OF INVENTION

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

see sheet B

- ☐ All further search fees have been paid within the fixed time limit. The present European search report has been drawn up for all claims.
- ☐ As all searchable claims could be searched without effort justifying an additional fee, the Search Division did not invite payment of any additional fee.
- ☐ Only part of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the inventions in respect of which search fees have been paid, namely claims:
- ☒ None of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims, namely claims:

1-6



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**LACK OF UNITY OF INVENTION**  
**SHEET B**

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EP 99 30 6293

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

1. Claims: 1-6

The claims relate to a method of displaying an object formed of 2D and 3D polygon data.

2. Claims: 7,8

The claims relate to a specific data structure (here: hierarchical) for storing object data.

3. Claims: 9-11

The claims relate to motion interpolation (here: Interpolation (transition) between slow motion and normal speed of game sequences).

4. Claims: 12-15

The claims relate to the way of movement of a character after having been hit and damaged.

5. Claims: 16,17

The claims relate to "half-cancel" of motions.

6. Claims: 18-20

The claims relate to controlling the flight locus of objects (here: flight path of bullets).

7. Claims: 21-27

The claims relate to (accelerated) collision judgement.

8. Claims: 28-29

The claims relate to presentation of waves.

9. Claim : 30

The claim relates to configuration of game stages.



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**LACK OF UNITY OF INVENTION**  
**SHEET B**

Application Number  
EP 99 30 6293

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

**10. Claims: 31-33**

The claims relate to vibration generation.

**ANNEX TO THE EUROPEAN SEARCH REPORT  
ON EUROPEAN PATENT APPLICATION NO.**

EP 99 30 6293

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.  
The members are as contained in the European Patent Office EDP file on  
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

14-10-2002

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			WO	9958214 A1	18-11-1999
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EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82