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File Number: T 253/90 - 3.5.2

Application No.: 86 303 154.8

Publication No.: 0 199 603

Title of invention: Method and apparatus for performing high speed video
animation

Classification: G11B 27/02

DECISION
of 4 September 1992

Applicant: AMPEX CORPORATION

Headword:

EPC Articles 54 and 56

Keyword: "Novelty and inventive step - yes, after amendment"



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Boards of Appeal

Chambres de recours

Case Number : T 253/90 - 3.5.2

D E C I S I O N
of the Technical Board of Appeal 3.5.2
of 4 September 1992

Appellant : Ampex Corporation
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Decision under appeal : Decision of Examining Division of the European
Patent Office dated 27 October 1989 refusing
European patent application No. 86 303 154.8
pursuant to Article 97(1) EPC.

Composition of the Board :

Chairman : E. Persson
Members : A. Hagenbucher
W.J.L. Wheeler

Summary of Facts and Submissions

I. The present appeal contests the decision of the Examining Division refusing Appellant's European patent application No. 86 303 154.8.

II. The reason given for the refusal was that the subject-matter of Claims 1 and 11 then on file was not new and that the subject-matter of Claim 10 did not involve an inventive step, having regard to document

D1: US-A-4 213 613

and general knowledge.

III. In the course of the appeal proceedings, the Appellant amended the claims and the description. The Board cited the following prior art documents:

D2: US-A-3 051 777 (from which D1 is a continuation-in-part)

D3: Journal of the Audio Engineering Society, Vol. 32, No. 3, 1984, March, pp. 114-121, and

D4: "Fernseh - und Kinotechnik" 1974, No. 2, pp. 33-36.

IV. Independent Claims 1 and 3 are now worded as follows:

"1. A system for recording on a recording medium an animated program as a succession of cels each of which comprises a selectable plurality of frames or fields constituting consecutive recordings of the same respective still image, comprising means (16-20) for supplying video still images; means (78, 47) for storing a cel size corresponding to the plurality of times a still video

image is to be recorded in a cel; means (80) for selecting an initial edit entry point; means (100) for recording a cel, beginning at an edit entry point thereof and ending at an edit exit point thereof, the means for recording being arranged to recue after the recording of a cel in preparation for the recording of the next cel and to continuously record each cel in the succession in response to the supply of the respective still image for each cel; characterised by programmed calculating means (30) and storage register means (43, 45) for storing numbers which denote in accordance with a time code the edit entry point of a cel and the edit exit point of a cel, the programmed calculating means being arranged to calculate from numbers representing in accordance with the time code the initial edit entry point and the stored cel size, numbers denoting the edit entry point and the edit exit point of each subsequent cel in the program wherein the edit exit point of a cel corresponds to the edit entry point of the next cel, the calculating means being responsive to an edit exit point when reached during recording of a cel to provide new edit entry and exit points for the next cel, the recording means recueing to a position determined from the number denoting the new edit entry point.

3. A system for recording on a recording medium an animated program as a succession of cels each of which comprises a selectable plurality of frames or fields constituting consecutive recordings of the same respective still image, comprising means (16-20) for supplying video still images; means (78, 47) for storing a cel size corresponding to the plurality of times a still video image is to be recorded in a cel; means (80) for selecting an initial edit entry point; means (100) for recording a cel, beginning at an edit entry point thereof and ending at an edit exit point thereof, the means for recording being arranged to recue after the recording of a cel in

preparation for the recording of the next cel and to continuously record each cel in the succession in response to the supply of the respective still image for each cel; characterised by programmed calculating means (30) arranged to calculate from numbers denoting in accordance with a time code the initial edit entry point and the stored cel size, numbers denoting in accordance with the time code the edit entry and the edit exit points of every subsequent cel in the program before any recording takes place, the edit exit point of a cel corresponding to the edit entry point of the next cel, there being a memory (21) for storing those calculated numbers, the recording means recueing after the recording of a cel to a position determined from the stored number denoting the edit entry point for the next cel."

- V. The Appellant argued that the subject-matter defined in Claims 1 and 3 was not only new in comparison with the prior art but also involved an inventive step.

The invention concerned a system for recording on a recording medium an animated program as a succession of cels each of which comprised a selectable plurality of frames or fields constituting consecutive recordings of the same respective still image as defined in the preambles of Claims 1 and 3.

Such a system was known from the closest prior art according to D1 or D2. According to D1/D2 the cel position and size of each cel was selected manually, however. In contrast to this prior art the present invention allowed - based on given values for the first cel - an automatic pre-determination of edit points of subsequent cels and therefore a more rapid and efficient recording due to the fact that the sequence of cels made use ^{of} the same cel size

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so that sequential edit points were calculable. This allowed a minimum of operator invention.

VI. The Appellant requested that the decision of the Examining Division be set aside and that subject to further corresponding amendment of the statements of invention in the description a patent may be granted on the basis of the following documents:

Claims: 1 to 4 received 12 August 1992;
5 to 8 received 3 August 1992;

Description: pages 2 to 7, 9 to 16, 18, 20 to 22, 25, 26, 28 to 30 according to EP-A-0 199 603;
pages 1, 8.1, 8.2, 8.3, 17, 19, 23, 24, 27 received 25 April 1992;

Drawings: pages 1/6 to 6/6 according to EP-A-0 199 603.

Reasons for the Decision

1. Having regard to the Board's interlocutory decision of 10 June 1991, whereby the Appellant was restored in his rights in respect of the filing of the Statement of Grounds of Appeal, the appeal is admissible.
2. Present Claims 1 to 8 result from a considerable amendment of the original claims. The Board is of the opinion that the amendments made to the claims are properly based on the original disclosure and do not infringe Article 123(2) EPC. Independent Claim 1 is based on the "manual embodiment" (cf. original Claim 9 in conjunction with the disclosure on original pages 24 and 25). Present

independent Claim 3 is based on the "automated embodiment" (cf. original description page 29).

3. Novelty

3.1 The prior art closest to the subject-matter of Claims 1 and 3 is disclosed in D1 and D2. Both documents deal with the same system for recording on a recording medium an animated program as a succession of cels in accordance with the preambles of Claims 1 and 3. D1 and D2 simplify the recording of a single cel by manually setting a counter in accordance with the number of frames for a respective cel to be recorded. In contrast thereto the invention aims at automating the recording of a succession of cels. For solving this problem the invention pre-calculates further edit entry and exit points taking advantage of restrictions not known from the prior art, namely the same cel size for a succession of cels and the fact that the edit exit point of a cel corresponds to the edit entry point of the next cel.

According to Claim 1 new edit entry and exit points for the next cel are calculated after reaching the edit exit point of a previous cel and according to Claim 3 all edit entry and exit points are calculated before any recording takes place.

3.2 Documents D3 and D4 do not come closer to the subject-matter of Claims 1 and 3 than the system known from D1 and D2. D3 and D4 do not deal with the recording of a succession of cels as defined in the preambles of Claims 1 and 3.

3.3 Hence, the subject-matters of Claims 1 and 3 are considered novel.

4. Inventive step

4.1 D1 and D2 disclose a manually controlled system for single frame video recording or the recording of cels each cel comprising a selectable plurality of frames or fields.

Although this prior art allows the recording of a succession of cels, the edit entry point and the size of each cel is manually determined by setting a counter at a respective time. Thus, the prior art envisages only the automation of the recording of a single cel. Starting from this closest prior art the present invention solves the objective problem of providing a system for making multitudes of single frame edits in a succession of cels with the minimum of operator intervention, wherein the recorder has the ability to automatically sequence the edit points to allow for a more rapid and efficient recording of the animated program.

4.2 The present invention solves this problem by

- (a) the use of numbers which denote in accordance with a time code the edit entry and edit exit points of a cel;
- (b) keeping the stored cel size for a number of adjacent cels constant;
- (c) pre-calculating by programmed calculating means further edit entry and exit points based on a given initial edit entry point and an explicitly or implicitly given constant cel size;

- (d) the recording means recueing after the recording of a cel to a position determined from a stored number denoting the edit entry point for the next cel.

According to Claim 1 edit entry and exit points for the next cel are automatically calculated after reaching the edit exit point of a preceding cel. According to Claim 3 all edit entry and exit points of the whole sequence are calculated and stored before any recording takes place.

- 4.3 The available prior art does not disclose or suggest pre-calculating further edit entry and exit points of a cel to be recorded adjacent to a preceding cel in order to allow for a more rapid and efficient recording of an animated program. It does not even suggest the use of a physical relationship between the storage areas of a succession of cels which could be the basis for an automatic calculation. According to D1/D2 each cel size is determined manually. The size of a cel is stored only initially in a counter determining the number of frames of a cel to be recorded. Contrary to feature 4.2(b) above, editing of a cel is controlled by changing the contents of the counter for each recorded frame until the counter reaches its final value.

Regarding feature 4.2(c) above, the Examining Division argued that D1 had means for calculating the edit entry point of a succeeding cel by selectively adding the cel size to the first edit entry point. Moving the tape in accordance with the contents of counter 210 for a given edit entry point of the first cel amounted to an analogous calculation of the edit entry point of the next cel. However, D1/D2 do not mention recording a sequence of

adjacent cels. The passages of D1 cited by the Examining Division in this respect concern the recording of individual frames. Even if a person skilled in the art tried to carry out cel recording in a manner analogous to the frame recording according to D1/D2, nothing in D1/D2 would point to using the same cel size for the calculation of the edit exit point of a succeeding cel before recording of this succeeding cel because there the cel size does not remain stored for use in further calculation. The use of a stored constant cel size is of major importance for the invention, however, because it allows an exact determination in advance of the duration of the entire program and to index forwards and backwards for insert editing.

In contrast to feature 4.2(a) above, the contents of the counter in D1/D2 are not in accordance with a time code.

Since in D1/D2 an edit entry point of a succeeding cel is not stored until the end of recording a cel, feature 4.2(d) is missing in this prior art.

Although document D3 refers very generally to video editing, it is mainly concerned with the computerised control of the recording of adjacent sections of an audio signal. The sections of the audio signal are randomly accessible. Adjacent selected sections have to be recorded with a properly contoured crossfade between them. Such a crossfade is not feasible in the creation of a video program. Recording of sequences composed of repetitions of the same still frame or pre-calculation of edit entry and exit points is not discussed therein.

Document D4 shows the use of a time code for identifying the beginning and end of scenes on an original production tape for the purpose of automatic retrieval of selected

scenes, but does not suggest the use of time codes for precalculating the edit entry points of a succession of cels.

- 4.4 Since none of the prior art documents addresses the idea of allowing a more rapid and efficient recording of an animated video program by pre-calculating edit entry and exit points of a succession of cels on a recording medium with the subsidiary advantage of being able to determine exactly in advance the duration of the entire program and to index forward and backwards for insert editing, these documents, either alone or in combination, are not regarded as being prejudicial to Claims 1 and 3.
- 4.5 For these reasons the Board has come to the conclusion that the subject-matters of independent Claims 1 and 3 involve an inventive step and that a patent may be granted on that basis.

Dependent Claims 2 and 4 to 8 concern preferred embodiments of the systems according to Claims 1 and 3.

5. The amendments already made to the description are for the purpose of acknowledging D1 to D4, correcting clerical errors and removing an obscurity. In the opinion of the Board, the current version of the application complies with Article 123(2) EPC. However, as noted by the Appellant in his reply dated 30 April 1992, the statements of invention in the description still need to be adapted to the valid present independent claims. Regarding the problem underlying the present invention mentioned in the second paragraph of page 8.1, it should be clarified that the multitudes of single frame edits concern a succession of cels. Furthermore, it should be considered whether the title of the invention needs to be adapted to the amended claims. Thus, although the question of novelty and

inventive step have been settled, the application is not yet formally ready for grant. Since the outstanding matters may be most expediently dealt with by the Examining Division, the Board considers it appropriate to remit the case to the Examining Division under Article 111(1) EPC for further prosecution.

Order

For these reasons, it is decided that:

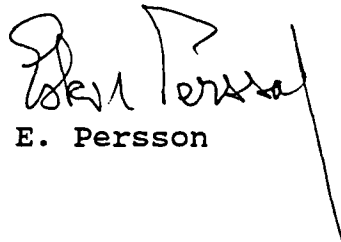
1. The decision under appeal is set aside.
2. The case is remitted to the Examining Division for further prosecution on the basis of the documents as defined in point VI above having regard to paragraphs 4.5 and 5 above.

The Registrar:



M. Beer

The Chairman:



E. Persson

