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Datasheet for the decision of 26 July 2022

Case Number: T 1678/19 - 3.4.03

Application Number: 11158915.6

Publication Number: 2500898

IPC: G09G3/36

Language of the proceedings: EN

Title of invention:
System and method for foldable display

Applicant:
BlackBerry Limited

Headword:

Relevant legal provisions:
EPC Art. 52(1), 56, 123(2)

Keyword:
Inventive step - (yes)
Amendments - allowable (yes)

Decisions cited:

Catchword:

Europäisches Patentamt
European Patent Office
Office européen des brevets

Beschwerdekammern

Boards of Appeal

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Case Number: T 1678/19 - 3.4.03

D E C I S I O N
of Technical Board of Appeal 3.4.03
of 26 July 2022

Appellant: (Applicant)	BlackBerry Limited 2200 University Avenue East Waterloo, ON N2K 0A7 (CA)
Representative:	Vigand, Philippe Novagraaf International SA Chemin de l'Echo 3 1213 Onex - Genève (CH)
Decision under appeal:	**Decision of the Examining Division of the European Patent Office posted on 4 January 2019 refusing European patent application No. 11158915.6 pursuant to Article 97(2) EPC.**

Composition of the Board:

Chairman	T. Häusser
Members:	A. Böhm-Pélissier
	T. Bokor

Summary of Facts and Submissions

I. The appeal is against the decision of the Examining Division refusing European patent application No. 11 158 915. The refusal was based on the ground of lack of novelty (Articles 52(1), 54 (1) and (2) EPC) in relation to the former main request and lack of inventive step (Article 56 EPC) and added subject-matter (Article 123(2) EPC) in relation to the former auxiliary request.

II. Reference is made to the following **documents**:

D2 = JP 2006 243621 A
D4 = US 2008/062164 A1

III. The Appellant (Applicant) indicated in its letters dated 26 April and 20 July 2022 that it withdraws the Main Request and requests grant of a patent based on an amended Auxiliary Request filed with these letters and thus **requests** as sole request that the decision under appeal be set aside and that a patent be granted based on the following documents:

Description: pages 4, 7 to 9 and 13 to 16 as originally filed, pages 1A, 2, 3, 5, 6 and 10 to 12 as filed with letter of 26 April 2022 and received on 28 April 2022; page 1 as filed online on 20 July 2022;

Claims: nos. 1-10 as filed online on 20 July 2022;

Drawings: sheets 1/7 to 7/7 as originally filed.

IV. The wording of independent claims 1, 9, and 10 of the sole request is as follows.

Apparatus **claim 1** (labelling (A), (B), ... introduced by the Board):

(A) A display system (10), comprising:
(B) a foldable display unit (11) to display visual information, the visual information based at least in part on display data; and
(C) a display control unit (14) configured for receiving the display data and at least one fold signal indicative of a fold in at least a portion of the display unit,
(D) and outputting one or more display control signals (20) operative to cause the display unit to display the visual information,
(E) the display control signals being output at least in part in response to the at least one fold signal to adapt the one or more display control signals to change a format of the visual information,
(F) wherein the fold in the display unit creates a deformation area (17) along a fold axis of the display unit,
(G) and wherein the format change compensates for impairment of the visual information in the deformation area by displaying the visual information in compensated format in the deformation area, the compensation being mathematically determined based on distortion experienced by a viewer at an assumed viewing angle.

Method **claim 9**:
(A') A method comprising:
(B')(D') generating one or more display control signals, at least in part in response to display data,

to cause a foldable display unit (11) to display visual information, the visual information displayed according to a first display format;
(C') monitoring a signal (20) indicative of a fold in the display unit; and
(E') in response to the signal indicative of a fold in the display unit, generating the one or more display control signals to change the display of visual information in the visual information to at least one second display format,
(F') wherein the second display format compensates for impairment in the display of visual information in the first format that is introduced by the fold in the display unit,
(G') wherein the second display format modifies the display of the visual information by compensating for the impairment in the display of the visual information by displaying the visual information in compensation format in the deformation area, the compensation being mathematically determined based on distortion experienced by a viewer at an assumed viewing angle.

Computer program product **claim 10:**
This claim comprises essentially the features of the method claim 9, but Feature (A') is replaced by
(A'') A computer program product comprising computer program instructions recorded in non-transitory form on a machine-readable media, the instructions adapted to execute on a computing system to: ...

V. The Appellant argued essentially that the claimed subject-matter was new and involved an inventive step and that the application documents did not extend beyond the content of the application as filed.

Reasons for the Decision

1. **The invention as claimed**

1.1 In a foldable display the displayed content in a distorted region of the screen is to be adapted to a viewer by means of sensors and a control signal such that the impairments or distortions of the content displayed in the folded region are compensated. The sensors are strain sensors detecting the position and degree of folding.

1.2 The alleged objective of the invention is an improved compensation of the distortion. This problem is solved by determining the kinds and degrees of distortion that may be experienced by a viewer - i.e. assuming that the display device is viewed from a particular / typical viewing angle - and mathematically determining the compensation.

2. Article 123(2) EPC

2.1 Basis for amended Features (G) / (G') is provided in the combination of paragraphs [0025] and [0026]. The Board agrees with the arguments of the Appellant that the skilled reader would read paragraphs [0025] and [0026] together and would recognise that paragraph [0026] relates to alternative embodiments where the disclosed methods of compensating for distortion could be applied to the teaching disclosed in paragraph [0025].

2.2 Consequently, the application complies with the requirements of Article 123(2) EPC.

3. Inventive Step

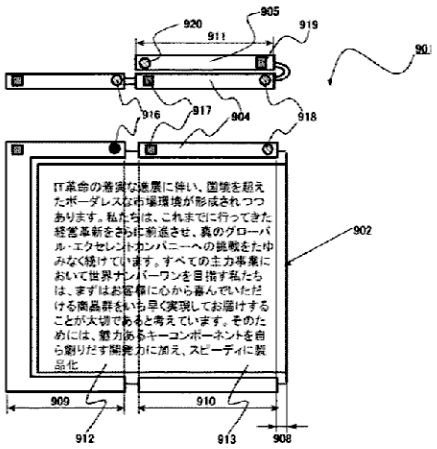
3.1 Closest prior art

D2 is considered closest prior art, because it has most features in common with claim 1. D4 is from a more remote technical field.

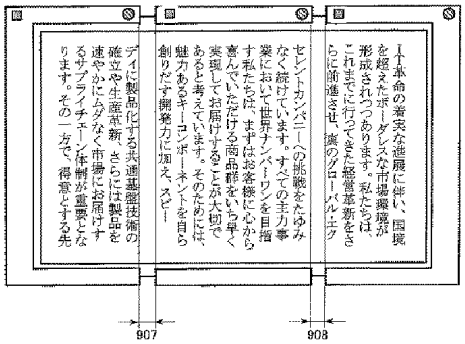
3.2 Disclosure of D2

3.2.1 D2 discloses a foldable screen. The screen is an electronic paper within a plastic frame which contains several parts (Fig. 12, reference signs 904, 905). The frame together with the electronic paper screen can be folded like a paper sheet as is shown in Fig. 12. Sensors, such as Hall sensors 918, 920 and magnets 917, 919 detect which parts of the screen are folded out. A control circuit receives the sensor signals and adapts the displayed content, which can be text or an image.

【図12】



【図17】



D2

3.2.2 D2 discloses in Fig. 12 that displayed content is adapted in the fold region in the area between sub-screen 912 and 913. The sub-region with the reference sign 908 in Fig. 12 is kept free of text, because in this constellation the electronic paper is too much

deformed such that it is not suitable for displaying text. The same is shown in Fig. 17 for regions 907 and 908 (see paragraph [0039]).

3.3 Difference

3.3.1 D2 therefore discloses Features (A) to (F). D2 discloses (paragraphs [0033]-[0039]) that the format change compensates for impairment of the visual information in the deformation area by displaying the visual information in compensated format in the formation area by means of
(a) adapted text spacing / positioning,
(b) adapted text font size or
(c) scaling an image.
D2 does not disclose that the compensation is mathematically determined based on distortion experienced by a viewer at an assumed viewing angle.

3.3.2 Present claim 1 therefore differs from D2 in Feature (G), i.e. in that the format change compensates for impairment of the visual information in the deformation area by displaying the visual information in compensated format in the deformation area, the compensation being mathematically determined based on distortion experienced by a viewer at an assumed viewing angle.

3.4 Effect

The effect of this difference is that the entirety of the flexible screen is used even after deformation and that the readability in the deformation zone is improved.

3.5 Problem

The objective technical problem can therefore be formulated as to use the entirety of the flexible screen for display and to improve the readability in the deformation zone.

3.6 Non-Obviousness

3.6.1 The Examining Division referred to document D4, arguing that compensation based on the assumed position of the observer is disclosed in paragraphs [0047] to [0050] of D4. D4 taught in this passage to adapt the projected content to the curved surface of the screen.

3.6.2 The Appellant argued that the skilled person would not have turned to document D4 from a consideration of the objective technical problem. D4 clearly related to a fixed surface with no flexibility, and contained no teaching in relation to identification of a fold region, let alone any compensation for impairment of visual information in a deformation area caused by folding. The skilled person would therefore not have turned to D4 based on the objective technical problem.

As the geometry of the display was already known in D4, the key point was purely understanding the field of view. This was equated to the observer but in a way that was different from the claim feature according which the compensation was mathematically determined based on distortion experienced by a view at an assumed viewing angle. In D4 the field of view was presented as a rigid mathematical element irrespective of any assumed viewing angle.

3.6.3 The Board agrees with the Appellant that even if the skilled person had turned to document D4 and by combining the teachings of D2 and D4, it would not have arrived at the combination of Features (A) to (G). D2 teaches only the adaptation to the viewer by scaling the image/text or by introducing blank spaces. D2 discloses inclination sensors to detect which part of the electronic book is opened, but not in order to determine a viewing angle. Nothing in D2 and D4 teaches for a foldable screen to first determine a viewing angle of the reader and then to adapt the distortion of the image / text according to the viewing angle.

3.6.4 Therefore, the subject-matter of claim 1 is inventive over the teachings of D2 and D4 alone or in combination (Articles 52(1) and 56 EPC).

3.6.5 Features (A') to (G') of method claim 9 and the corresponding features of computer implemented method claim 10 correspond to Features (A) to (G) of claim 1. Therefore, the same reasoning applies to claims 9 and 10.

4. Conclusion

Hence, and in the light of the conclusion reached above, the Board judges that the subject-matter of claims 1, 9 and 10 of the sole request involves an inventive step within the meaning of Articles 52(1) and 56 EPC. Claims 2-8 of the Main Request involve an inventive step at least by reason of their dependence on claim 1. The Board is satisfied that the description has been suitably adapted to the claims of the sole request.

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 with the order to grant a patent in the following version:

Description: pages 4, 7 to 9 and 13 to 16 as originally filed, pages 1A, 2, 3, 5, 6 and 10 to 12 as filed with letter of 26 April 2022 and received on 28 April 2022; page 1 as filed online on 20 July 2022;

Claims: nos. 1-10 as filed online on 20 July 2022;

Drawings: sheets 1/7 to 7/7 as originally filed.

The Registrar: The Chairman:

S. Sánchez Chiquero T. Häusser

Decision electronically authenticated