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Datasheet for the decision of 16 March 2012

Case Number: T 1455/10 - 3.5.03

Application Number: 05014707.3

Publication Number: 1615408

IPC: H04M 1/02

Language of the proceedings: EN

Title of invention:
Foldable device with a 3d hinge having a displaced vertical axis

Applicant:
Sharp Kabushiki Kaisha

Headword:
Foldable telephone/SHARP

Relevant legal provisions:
EPC Art. 56

Keyword:
"Inventive step - no"

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Case Number: T 1455/10 **-** 3.5.03

D E C I S I O N
of the Technical Board of Appeal 3.5.03
of 16 March 2012

Appellant: (Applicant)
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Decision under appeal: **Decision of the Examining Division of the European Patent Office posted 15 February 2010 refusing European patent application No. 05014707.3 pursuant to Article 97(2) EPC.**

Composition of the Board:

Chairman: A. S. Clelland
Members: B. Noll
M.-B. Tardo-Dino

Summary of Facts and Submissions

I. This appeal is against the decision of the examining division to refuse European patent application No. 05014707.3 on the ground that the subject-matter of claim 1 of each of a main and an auxiliary request lacked an inventive step (Article 56 EPC).

II. In the notice of appeal the appellant requested that the impugned decision be set aside and maintained the requests considered by the examining division. Oral proceedings were conditionally requested.

III. In a communication accompanying a summons to oral proceedings the board gave a preliminary view on the case, in particular on inventive step (Article 56 EPC) of both requests on file. The following documents were inter alia referred to in the communication:

D1: US 6,728,557 B1
D4: US 2003/0228847 A1

IV. With a response to the board's communication received on 15 February 2012, the appellant submitted arguments to support the requests on file.

VIII. Oral proceedings before the board were held on 16 March 2012.

The appellant requested that the decision under appeal be set aside and that a patent be granted on the basis of claims 1 - 8 of the main request or alternatively of claims 1 - 8 of the auxiliary request, both filed on 20 October 2009.

V. Claim 1 of the main request reads as follows:

"A portable device comprising

a first housing (2);

a projection section (8) sticking up perpendicularly to a front face (7a) of said first housing (2);

a second housing (4) having a display section (14), and a hinge section (3) connected both to said first housing (2) and said second housing (4),

said hinge section (3) being rotatable with respect to said first housing (2) on a first rotation axis (5) disposed in a connection section between said hinge section (3) and said first housing (2), whereby said first rotation axis (5) runs in said projection section (8) in parallel to shorter side faces (7c) of said first housing (2) above said front face (7a) in a distance,

said second housing (4) being rotatable with respect to said hinge section (3), on a second rotation axis (6) disposed in a connection section between said second housing (4) and said hinge section (3),
said second rotation axis (6) being parallel to longer sides of a front face (4a) of said second housing (4) and orthogonal to said first rotation axis (5) at a region where the respective distances to side faces (4b) of said second housing (4) are different,
a distance between said second rotation axis (6) and one of said side faces (4b) being [sic] closer to said second rotation axis (6) is either identical with or shorter than the distance between said first rotation axis (5) and said front face (7a) of said first housing (2), and

said display section (14) being capable of being positioned horizontally by rotating said second housing (4) on said second rotation axis (6) and then rotating said hinge section (3) and said second housing (4) on said first rotation axis (5) with respect to said first housing (2) to cause said one of said side faces (4b) to face said front face (7a) of said first housing (2)."

Claim 1 of the auxiliary request further specifies that the hinge section is a "U-shaped hinge section" and includes a pair of arms (3n) and that the pair of arms of said U-shaped hinge section is rotatable with respect to the projection section of the first housing on the first rotation axis.

VI. At the end of the oral proceedings the board announced its decision.

Reasons for the decision

1. *Claim 1 of the main request - inventive step (Article 56 EPC)*

1.1 It was not contested by the appellant that D4 is the single most relevant prior art document for assessing inventive step. It discloses a foldable telephone including a main body 3 constituting a first housing and a cover 4 having a display section and constituting a second housing. A hinge section for linking the main body and the cover is composed of a hinge 9 and a rotation supporting section 10 (cf. figure 3) so as to define a pivot axis a1, a2 about which the telephone

can be folded and unfolded. The axis a1, a2 in D4 corresponds to the first rotation axis in the terminology of claim 1. The section 10 of hinge 9 as shown in figures 3 and 6 is considered by the board as equivalent to the projection section of claim 1. The pivot axis is parallel to the short edge of each body and the board further understands from figure 6 that this axis is spaced from, i.e. at a distance to, the face of the main body bearing the operation section. The rotation supporting section further has a pivot axis b1, b2 perpendicular to the pivot axis a1, a2 (cf. figure 4). The intention of having a second axis is to enable the display section to be rotated by 180° when the telephone is unfolded so that, upon re-folding the telephone, the display faces the viewer while the telephone is again in a compact form (cf. figure 6 and paragraph [0045]). This ensures an excellent portability of the foldable telephone even when the display section is in use (paragraph [0050]). By having the second axis b1, b2 along the longitudinal centre line of the cover it remains at the same position with respect to the body, independently of which side faces out so that the telephone is always in a compact form when folded. The disclosure of D4 as outlined above is not contested by the appellant.

1.2 Accordingly, the device as claimed in claim 1 differs from that of D4 in the following features:

(a) the second axis is closer to one side face of the second housing than the other, the distance between said second axis (6) and the closer of the side faces (4b) being either identical to or shorter than the distance between said first axis (5) and said front

face (7a) of said first housing (2), and
(b) said display section (14) being capable of being positioned horizontally by rotating said second housing (4) on said second axis (6) and then rotating said hinge section (3) and said second housing (4) on said first axis (5) with respect to said first housing (2) to cause said one of said side faces (4b) to face said front face (7a) of said first housing (2).

The device known from D4 is modified by features (a) and (b) such that the display section can be directly brought from the folded state into a landscape orientation, as shown in figure 6 of the application, by turning the display section about the second axis so that one of the two longer edges of the display section becomes adjacent to the main body. Thereafter it can further be rotated about the first axis to bring the display into portrait orientation, see figure 7. The appellant defines the technical problem to be solved as "how to allow a user to arrange two housing parts of a portable device such that a display located in one of the housing parts is horizontally placed in front of the other housing part, wherein an intuitive, flexible as well as pleasant movement is possible" (point 1.2 of the appellant's letter received on 15 February 2012). This is accepted by the board as the objective technical problem.

1.3 The definition of the problem does not itself involve an inventive step since a configuration of a foldable telephone in which the display is placed with its longer edge adjacent to the main body is known from D1 (cf. figures 7 and 8).

The skilled person would moreover derive from D1 the understanding that arranging the telephone with the configuration as shown in figures 7 and 8 requires that the display section be rotatable about an axis which is near an edge of the display section facing the main body. The skilled person would further find out, merely by trial and error, that by not having this axis spaced from the edge of the cover as specified in claim 1, the cover could be at risk of abutting the main body when the telephone is brought to a configuration as shown in figure 7 or 8 of D1. The skilled person, starting out from D4 and having regard to D1 and common knowledge, would therefore arrive at the device of claim 1 without the exercise of inventive skill.

1.4 The appellant's arguments can be summarized as follows:

Paragraphs [45] and [50] of D4 emphasize that keeping a compact form while having the display turned to the outside is a key element of the D4 telephone. This feature requires that the second axis be centred between the longer edges of the display section. Furthermore, the first and the second axes in D4 are implemented by using a single, integrally formed symmetric T-shaped shaft member. The skilled person would therefore not consider shifting the second axis towards the edge since this would result in a loss of the compact form and would additionally require a re-design of the hinge mechanism. As regards D1, the specific construction of the joint 112 having two orthogonal legs makes it mandatory that the joint is positioned at the corners of the body elements. The movement of the first and second housings according to

the invention could not be obtained by the hinge mechanism of D1.

1.5 The board is not convinced by the appellant's arguments since they are restricted to question as to whether the skilled person would consider a combination of the structural features of the joints of each of the D1 and D4 telephones whereas claim 1 specifies only the locations of the pivot axes but not any structure of the joint itself. In particular, having the joint 112 constructed as in D1 is not a real cause for it being located at the corners of the body elements. In the board's view, the location of the joint is merely a consequence of the desired functionality: it would be self-evident to the skilled person that if it is desired to view the display with the device in a compact form, as in D4, then the second axis must be at the longitudinal centre of the display section, whilst if on the other hand it is desired to view the display in a landscape orientation then the second axis must be close to the edge. Thus, the position of the second axis is in the board's view solely dependent on the desired functionality but not on a specific mechanical implementation. The skilled person would therefore recognize from D1 that by locating the second axis of D4 close to the longitudinal edge of the display section a landscape display could be obtained and would see this as independent of a specific mechanical implementation.

For these reasons the appellant's arguments must fail.

1.6 In view of the above the board concludes that the device of claim 1 of the main request lacks an

inventive step (Article 56 EPC). The main request is therefore not allowable.

2. *Claim 1 of the auxiliary request - inventive step (Article 56 EPC)*

2.1 The additional specification of the hinge section as being U-shaped further distinguishes the claimed device from D4 insofar as although D4 has what is in effect a U-shaped hinge section, see figure 3, this is part of the first housing. However, in the board's view it is arbitrary, and therefore a matter of non-inventive choice for the skilled person, whether the U-shaped portion of the hinge is part of the first or the second housing. Nor does the board see any specific effect being associated with the term "arms" as the hinges 9 in figure 3 of D4 constitute "arms", this term being used in the application merely as a synonym for the more general expression "end sections" (cf. paragraph [0028] of the published application). Therefore, the features added in claim 1 of the auxiliary request do not contribute to an inventive step.

2.2 The appellant argued that having the U-shaped hinge portion attached to the second housing would permit the user to hold down the arms while opening the display towards the landscape mode, thus enabling the device to be more easily handled.

The appellant was however not able to identify any disclosure in the application which suggested that the ease of handling of the device depended on whether the U-shaped hinge portion is part of the first or the

second housing. Therefore, the board is not convinced by this argument.

2.3 In view of the above and taking into account the considerations as set out at point 1 above in respect of claim 1 of the main request, the board concludes that claim 1 of the auxiliary request lacks an inventive step (Article 56 EPC). The auxiliary request is therefore not allowable.

3. There being no allowable request on file the appeal has to be dismissed.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar: The Chairman:

D. Magliano A. S. Clelland