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Datasheet for the decision of 2 February 2010

Case Number: T 1024/07 - 3.5.03

Application Number: 03706937.4

Publication Number: 1480502

IPC: H04M 1/18

Language of the proceedings: EN

Title of invention:
Foldable electronic equipment

Applicant:
Panasonic Corporation

Opponent:
-

Headword:
-

Relevant legal provisions:
EPC Art. 56

Relevant legal provisions (EPC 1973):
-

Keyword:
"Inventive step (all requests - no)"

Decisions cited:
-

Catchword:
-

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Beschwerdekammern | Boards of Appeal | Chambres de recours

Case Number: T 1024/07 - 3.5.03

D E C I S I O N
of the Technical Board of Appeal 3.5.03
of 2 February 2010

Appellant: Panasonic Corporation
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Decision under appeal: **Decision of the Examining Division of the European Patent Office posted 24 November 2006 refusing European application No. 03706937.4 pursuant to Article 97(1) EPC 1973.**

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 refusing European application no. 03706937.4.

II. The reason given for the refusal was that the invention as claimed in claim 1 of a main request lacked an inventive step. Claims according to an auxiliary request filed during the oral proceedings before the examining division were not admitted into the proceedings.

III. In the notice of appeal the appellant requested that the decision of the examining division be set aside and that a patent be granted based on the same claims as considered in the appealed decision, i.e. claims 1 and 2 as filed on 17 January 2006.

IV. In a communication the board gave a preliminary opinion on inventive step of the subject-matter claimed. The board introduced, pursuant to its discretion under Article 114(1) EPC, the documents

D5: US 6,344,977 B1 and
D6: US 6,078,792 A

into the procedure.

V. On 6 August 2009, together with a reply to the board's communication the appellant filed a new set of claims 1 and 2 replacing the claims on file.

VI. In response to a summons to oral proceedings before the board additional claim sets according to first and

second auxiliary requests were filed on 22 December 2009.

VII. Claim 1 according to the main request reads as follows:

"A flip electronic device comprising bearings (3a, 3b, 4a, 4b) for supporting first (1) and second (2) enclosures rotatably with respect to each other, cylindrical members (13, 14) arranged coaxially with the bearings (3a, 3b, 4a, 4b), and a flexible substrate (15) inserted into the cylindrical members (13, 14) at the midsection thereof and electrically connected to the electronic circuits provided in the first and second enclosures (1, 2) respectively at both ends thereof, wherein at least one of the electronic circuits provided respectively in the first and second enclosures (1, 2) includes a printed wiring assembly (17) whereof the end is located at the position in the vicinity of the cylindrical members (13, 14), the printed wiring assembly (17) and the flexible substrate (15) are connected electrically with respect to each other at the portion located in the vicinity of the cylindrical members (13, 14) of the printed wiring assembly (17), and
the cylindrical members (13, 14) are formed integrally on the first and second enclosures (1, 2) respectively, characterized in that
the portion of the printed wiring assembly (17) located in the vicinity of the cylindrical members (13, 14) is provided with water-absorbing members (19, 20) for absorbing water-drops entered [sic] into the cylindrical members (13, 14)."

Claim 1 according to the first auxiliary request adds to the characterizing portion of claim 1 of the main request the additional feature "on the front side and the back side thereof" after the words "water-absorbing members (19, 20)".

Claim 1 according to the second auxiliary request adds to the characterizing portion of claim 1 of auxiliary request 1, after the words "in the vicinity of the cylindrical members (13, 14)", the feature "and opposing to [sic] the cylindrical members (13, 14)".

VIII. Oral proceedings before the Board were held on 2 February 2010. It was requested that the decision under appeal be set aside and a patent granted on the basis of the claims filed on 6 August 2009 as a main request or, in the alternative, on the basis of the claims according to the first or second auxiliary request, each filed on 22 December 2009.

IX. 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 *The prior art*

The invention concerns a foldable or "flip" electronic device as described in paragraphs [0003-0005] of the published application in which the two halves of the

housing are interconnected by a flexible wiring substrate protected by cylindrical members integrally formed with the housing halves. D5 is regarded by the board as the closest prior art for assessing inventive step since it discloses a flip electronic device in the form of a mobile phone having the features described in the above-mentioned paragraphs of the application.

It is not contested by the appellant that D5 discloses a flip electronic device with the features set out in the pre-characterizing portion of claim 1. Figure 6 of D5 is an exploded view of the hinge arrangement between the two housing halves whilst figure 9 is a cross-sectional view. Using the language of D5, these drawings and the associated description disclose first and second bodies 51, 52, the bodies being composed of respective housings 62, 65 and covers 63, 66 and comprising respective bearing parts 54, 55 and 65a, 65d which form a hinge. The housings and covers are further integrally formed with respective cylindrical portions 62b, 63a and 65b, 66a which, after assembly of the housings and covers, form cylindrical members of a compartment coaxially arranged with the bearings. The compartment covers a flexible cable or substrate 100 which is connected at its ends 79, 78 to respective printed circuit boards 64, 67 provided in the first and the second bodies. It can be seen from figure 6 that the connection with each circuit board is located in close vicinity to the cylindrical compartment.

The characterizing feature of claim 1, that the portion of the printed wiring assembly located in the vicinity of the cylindrical members is provided with water-absorbing members for absorbing water-drops entered

into the cylindrical members, is not known from D5. The device according to claim 1 is thus novel having regard to D5.

1.2 The board accepts the definition of the technical problem made by the appellant (see page 2 of the submission filed on 6 August 2009) as being to protect electronic circuit boards in a mobile device from water seeping through non-sealable openings in the housing of the device. This problem is mentioned in paragraph [0005] of the published application.

1.3 D6 describes a telephone having a solution to the problem of rain water intruding through clearances between the keys of the keyboard and the housing; in such conditions the keys cannot be effectively kept watertight when actuated by the user. In order to prevent the rain water from reaching the electric circuits it is suggested at column 3, lines 20 to 23 of D6 that "any possible water entry site in the housing" be surrounded with a water-absorbent packaging. Although D6 is primarily concerned with water ingress via the keys, it would be obvious to the skilled person from this passage that this teaching could be applied to water ingress via the hinge of a foldable phone. Thus, the skilled person faced with the problem of water ingress in the hinge of the D5 phone is taught by D6 to provide water-absorbent packaging to prevent water from reaching the electronic circuits. The skilled person could be expected to determine the location at which the water-absorbent material should be placed by trial and error. Having regard to the requirement that water intrusion into the cylindrical member should not reach the electrical circuits of the

telephone, the person skilled in the art would find it obvious to provide the water-absorbent material in the vicinity of the opening through which the flexible substrate enters the housing from the cylindrical member. The skilled person would also consider fixing the water-absorbent material on the printed circuit board, since the edge of the circuit board in the D5 telephone is adjacent to the opening between the housing and the cylindrical member. Thus, the skilled person, having started out from the telephone of D5, would arrive at the foldable device according to claim 1 without the exercise of inventive skill.

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

D5 is silent about the problem of water intruding into a foldable telephone. The prior art cited in the decision under appeal would lead the skilled person to conclude that the hinge and the cylindrical member of a foldable telephone have to be made watertight and would thus lead the skilled person away from the invention. A person skilled in the art would therefore not consider a solution which accepts water ingress into the cylindrical member. D6 moreover does not relate to a foldable telephone and would not be considered by the skilled person in solving a technical problem specific to a foldable telephone, namely water ingress via non-sealable openings such as the hinge. Even if it were considered, D6 would only suggest that a gap through which water may intrude into the housing has to be completely surrounded by water-absorbent material. Applying this teaching to the D5 foldable telephone a skilled person might, at most, consider surrounding the clearances between the cylindrical member and the

bearings. Contrary to this teaching, the invention as claimed does not require these clearances to be completely surrounded. It has been recognized that is sufficient to have water-absorbent material on the printed circuit board in the vicinity of the cylindrical member. This solution simplifies the production of the telephone as it is convenient to put the water-absorbent material on the circuit board before assembling the circuit board into the housing. The claimed solution is not therefore rendered obvious by any available prior art.

1.5 The board is not convinced by these arguments. The problem of water ingress must arise in the D5 telephone due to the cylindrical members being integrally formed with the enclosures so that small clearances at the cylindrical members are inevitable. The same problem exists in the D6 telephone since there is an inevitable clearance between a key and the housing when the key is actuated. The skilled person would therefore consider D6 as relevant to the problem to be solved. Regarding the location of the water-absorbent material, the published application states at paragraph [0022] that the water-absorbent material may also be provided "at the position close to the cylindrical member of the flexible substrate or may be provided on both of them". In other words, the actual location is a matter of trial and error. Given that the only requirement is to place the water-absorbent material close to the opening in the housing, the skilled person could be expected to consider all structural parts in the vicinity of the opening, including the walls of the housing, the printed wiring assembly or the flexible wiring substrate, as suitable candidates for the water-

absorbent material being attached. No inventive skill can be seen in the particular choice made.

1.6 Accordingly, the board concludes that the device as claimed in claim 1 does not involve an inventive step (Article 56 EPC).

2. *Claim 1 of the first auxiliary request - inventive step*

Claim 1 according to the first auxiliary request further specifies that the water-absorbent material is provided at the front side and the back side of the printed wiring assembly. As with the solutions discussed at point 1.5 above, arriving at this solution is merely a matter of trial and error, and provides no surprising benefit over the alternative solutions. For this reason and the reasons given at point 1.3 above the subject-matter of claim 1 according to the first auxiliary request lacks an inventive step (Article 56 EPC).

3. *Claim 1 of the second auxiliary request - inventive step*

The further feature "opposing to the cylindrical members" does not add anything in substance to the claimed device since in the discussion of the higher requests it was presumed that the water-absorbent material must be arranged in close proximity to the opening between the housing and the cylindrical member. The subject-matter of claim 1 according to the second auxiliary request does therefore not involve an inventive step for the same reasons as for the first auxiliary request.

4. *Conclusion*

Since the subject-matter of claim 1 of each of the requests fails to meet the requirement of inventive step the appeal cannot be allowed.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar: The Chairman:

D. Magliano A. S. Clelland