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**Datasheet for the decision
of 14 April 2011**

Case Number: T 1696/07 - 3.5.05

Application Number: 04027682.6

Publication Number: 1513055

IPC: G06F 3/033

Language of the proceedings: EN

Title of invention:

Input apparatus for performing input operation corresponding to indication marks and coordinate input operation on the same operational plane

Applicant:

ALPS ELECTRIC CO., LTD.

Headword:

Input apparatus/ALPS ELECTRIC

Relevant legal provisions:

EPC Art. 52(1), 56
RPBA Art. 13(3)

Relevant legal provisions (EPC 1973):

EPC Art. 106, 107, 108

Keyword:

"Inventive step - (no, all requests)"

Decisions cited:

J 0010/07

Catchword:

-



Case Number: T 1696/07 - 3.5.05

D E C I S I O N
of the Technical Board of Appeal 3.5.05
of 14 April 2011

Appellant:

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Decision under appeal:

Decision of the Examining Division of the
European Patent Office posted 13 April 2007
refusing European application No. 04027682.6
pursuant to Article 97(1) EPC 1973.

Composition of the Board:

Chair: A. Ritzka
Members: P. Corcoran
P. Schmitz

Summary of Facts and Submissions

- I. This is an appeal against the decision of the examining division to refuse the European patent application No. 04 027 682.6, publication No. EP 1 513 055, which was announced in oral proceedings held on 16 March 2007 with the written reasons being dispatched on 13 April 2007.
- II. The application was filed as a divisional application of European application No. 02 017 320.9, publication No. EP 1 286 250, which is the subject of the co-pending appeal case T 1458/08.
- III. The decision under appeal was based on a sole request comprising claims 1 to 4 as filed with the letter dated 6 March 2007. According to the decision, the subject-matter of claim 1 of the request lacked an inventive step in the light of the following prior art documents:
- D1: EP 1 081 922 A;
D2: US 5 869 790 A.
- IV. Notice of appeal was received at the EPO on 12 June 2007 with the appeal fee being paid on the same date. In the notice of appeal the appellant requested that the decision of the examining division be set aside and that a patent be granted on the basis of the documents on file, i.e. claims 1 to 4 as filed with the letter dated 6 March 2007. A written statement setting out the grounds of appeal was received at the EPO on 14 August 2007.
- V. In a communication accompanying a summons to oral proceedings to be held on 14 April 2011 in the matter

of the present appeal and the co-pending appeal case T 1458/08, the board gave its preliminary opinion that the appellant's request was not allowable.

VI. The board's communication made reference, *inter alia*, to the following prior art documents:

D4: US 6 204 839 A;

D5: Larry K. Baxter: "Capacitive Sensors - Design and Applications", p.138-139, 1997, IEEE Press, ISBN: 0-7803-1130-2;

D7: US 5 666 113 A.

D4 was cited in the European Search report of the present application. D5 is a textbook extract cited by the board as evidence of common general knowledge with respect to capacitive input devices. D7 was cited in the European Search report of D1.

VII. The communication contained *inter alia* objections under Articles 84, 76(1) and 123(2) EPC against claim 1 and the opinion was expressed that, insofar as the subject-matter of the claim could be understood, it lacked an inventive step in the light of the disclosure of D1 which was considered to represent the closest prior art.

VIII. With a letter of reply dated 11 March 2011, the appellant filed new requests consisting of a main request and first to third auxiliary requests to replace the request on file.

IX. With a letter dated 13 April 2011 and received at the EPO by telefax after office hours on the same date the appellant withdrew the second auxiliary request and filed amended versions of the main request, the first auxiliary request and the third auxiliary request.

According to the appellant, the claims had been amended in order to reflect the wording of the original disclosure as closely as possible and some features had been reworded using the wording of the original disclosure.

- X. At the oral proceedings before the board held as scheduled on 14 April 2011, the appellant requested that the decision under appeal be set aside and that a patent be granted on the basis of the main request or the first or second auxiliary requests submitted during the oral proceedings. Each of the aforementioned requests consists of a single claim, i.e. claim 1.

The further documents on which the appeal is based, i.e. the text of the description and the drawings, are as follows:

Description, pages: 1-26 as originally filed.

Drawings, sheets: 1/8-8/8 as originally filed.

- XI. Claim 1 of the appellant's main request reads as follows:

"Input apparatus (1) comprising:

a flat input device (4) of a capacitive type which generates an input signal and includes an X-direction detection electrode and a Y-direction detection electrode, both of which are formed of Ag (silver) paste, and are disposed such that they oppose each other in a matrix pattern with a resin sheet therebetween;

an indicator sheet (7) laminated and fixed on a surface of the flat input device (4), the indicator sheet (7) having a plurality of indication marks (8), and

a control unit (21) which generates an operation signal on the basis of an input signal received from the input device (4), wherein the control unit (21) is configured to switch between two different input modes and

to set a coordinate input mode, when the position at which a user's finger touches the indicator sheet (7) on the input device (4) is moved before a predetermined time interval elapses; wherein, in the coordinate input mode, coordinate data corresponding to the movement of the user's finger and an operation signal on the basis of the coordinate data are generated; and

to set a indication-mark input mode, when one of the indication marks (8) is pushed for a predetermined time interval; wherein, in the indication-mark input mode, an input signal corresponding to an item represented by the indication mark (8) and an operation signal on the basis of the input signal are generated."

XII. Claim 1 of the appellant's first auxiliary request reads as follows:

"Input apparatus (1) comprising:

a flat input device (4) of a capacitive type which generates an input signal and includes an X-direction detection electrode and a Y-direction detection electrode, both of which are formed of Ag (silver) paste, and are disposed such that they oppose each other in a matrix pattern with a resin sheet therebetween;

an indicator sheet (7) laminated and fixed on a surface of the flat input device (4), the indicator

sheet (7) having a plurality of indication marks (8);
display means (3); and

a control unit (21) which generates an operation signal on the basis of an input signal received from the input device (4), wherein the control unit (21) is configured to switch between two different input modes and

to set a coordinate input mode, when the position at which a user's finger touches the indicator sheet (7) on the input device (4) is moved before a predetermined time interval elapses; wherein, in the coordinate input mode, coordinate data corresponding to the movement of the user's finger and an operation signal on the basis of the coordinate data are generated; and

to set a indication-mark input mode, when one of the indication marks (8) is pushed for a predetermined time interval; wherein, in the indication-mark input mode, an input signal corresponding to an item represented by the indication mark (8) and an operation signal on the basis of the input signal are generated; and

wherein the input apparatus (21) is configured to provide a determination operation to select an item from a menu on the display means (3), which determination operation is executed by softly hitting the indicator sheet (7) on the input device (4) by a user's finger, and to distinguish the determination operation from the pushing operation to set the indication-mark input mode, on the basis of a difference between changes in the capacitance per unit of time."

XIII. Claim 1 of the appellant's second auxiliary request reads as follows:

"Input apparatus (1) comprising:

a flat input device (4) of a capacitive type which generates an input signal and includes an X-direction detection electrode and a Y-direction detection electrode, both of which are formed of Ag (silver) paste, and are disposed such that they oppose each other in a matrix pattern with a resin sheet therebetween;

an indicator sheet (7) laminated and fixed on a surface of the flat input device (4), the indicator sheet (7) having a plurality of indication marks (8), the indicator sheet (7) being formed in a shape having concavities and convexities such that regions at which the indication marks (8) are disposed protrude upward; and

a control unit (21) which generates an operation signal on the basis of an input signal received from the input device (4), wherein the control unit (21) is configured to switch between two different input modes and

to set a coordinate input mode, when the position at which a user's finger touches the indicator sheet (7) on the input device (4) is moved before a predetermined time interval elapses; wherein, in the coordinate input mode, coordinate data corresponding to the movement of the user's finger and an operation signal on the basis of the coordinate data are generated; and

to set a indication-mark input mode, when one of the indication marks (8) is pushed for a predetermined time interval; wherein, in the indication-mark input mode, an input signal

corresponding to an item represented by the indication mark (8) and an operation signal on the basis of the input signal are generated."

- XIV. During oral proceedings before the board, the admissibility of the appellant's requests was discussed in view of the lateness of their filing. The board decided to exercise its discretion to admit the requests into the proceedings and observed that, in view of the amendments made by the appellant, D4 and D7 now appeared to be more relevant with respect to the question of inventive step.
- XV. In response to the board's observations, the appellant made submissions in relation to D4 and D7.
- XVI. With respect to D4, it was submitted *inter alia* that said document did not disclose a flat input device such as a touchpad but rather an input device having a capacitance based sensing system comprising a plurality of transceiver pads.
- XVII. With respect to D7, it was submitted *inter alia* that said document disclosed automatic switching between a "cursor control mode" and a "keypad emulation control mode" but that the setting of the latter mode was based on sensing the lift-off of the activating member before a predetermined time interval had elapsed whereas according to the claimed invention an indication mark had to be pushed for a predetermined time interval in order to set the corresponding mode ("indication mark input mode"). According to the appellant, setting the indication mark input mode as specified in claim 1 was more convenient for the user as it did not require a

lift-off of the activating member within a predetermined time interval and would also be likely to result in less wear and tear on the surface of the flat input device compared to use of a tap gesture as taught by D7.

It was also submitted that claim 1 specified that the user's finger touched the indicating unit whereas according to Fig. 2A of D7, the indicating unit ("keypad template 28") was positioned below the glass substrate of the touchpad and thus the indicator sheet of D7 could not be touched by the user's finger.

XVIII. At the end of the oral proceedings the chair announced the board's decision.

Reasons for the Decision

1. Admissibility of the appeal

1.1 The appeal complies with the provisions of Articles 106 to 108 EPC 1973 which are applicable according to J 0010/07, point 1 (cf. Facts and Submissions, item IV. above) and is therefore admissible.

2. Admissibility of late-filed requests

2.1 Due to the late filing of the appellant's requests, the board considered the question of their admissibility during the oral proceedings.

2.2 Taking into account the appellant's submissions to the effect that the amendments were intended to clarify the

essential technical features of the matter for which protection was sought and that the claims had been amended in order to reflect the wording of the original disclosure as closely as possible (cf. Facts and Submissions, item IX. above), the board found that said amendments constituted a *bona fide* attempt to address the objections raised under Articles 84 and 123(2) EPC in its communication. Furthermore, the amendments resulted in a definition of the claimed invention which was clearly distinguished from the prior art of D1 and were thus found by the board to further address the inventive step objections raised in its communication.

2.3 The board also found that the amendments did not raise issues which could not be dealt with without adjournment of the oral proceedings (cf. Article 13(3) RPBA).

2.4 In view of the foregoing, the board decided to exercise its discretion to admit the late-filed requests into the proceedings.

Main request

3. *Inventive step*

3.1 D7 discloses an input apparatus comprising a flat input device of a capacitive type which generates an input signal, viz. a touchpad input device 14 which in the preferred embodiment is a capacitive touchpad (cf. D7: col.3 l.30-40). The board judges that it is implicit in the disclosure of D7 that such an input device includes X- and Y-direction detection electrodes as claimed in view of the fact that such input devices are

conventionally used to generate a signal comprising X,Y location coordinates (cf. D7 col.1 l.1.16-25).

3.2 The "template" disclosed in col.3 l.51-58 of D7 is evidently an indicator sheet having a plurality of indication marks. According to the cited passage of D7 the template may be placed over the surface of the touchpad (cf. also col.1 l.42-45). On this basis D7 is found to disclose an indicator sheet fixed on a surface of the flat input device, the indicator sheet having a plurality of indication marks.

3.3 The input apparatus of claim 1 comprises a "control unit" which generates an operation signal on the basis of an input signal received from the input device and which is configured to switch between two different input modes. Based on [0039] of the description, the board judges that in the given context the term "control unit" denotes a conventional processing device which generates an operation signal in response to a user's interaction with the input device is configured by means of software to switch between two different input modes.

D7 discloses that the touchpad, which is employed as an input device for a computer (cf. D7: col.3 l. 30-32), can operate in two different input modes, viz. a "cursor control" mode (also termed "mouse emulation" mode) and a "keypad control" mode and it automatically changes modes through the use of software which interprets the initial motion made by the user immediately after contact to ascertain whether the user wishes the touchpad to be in the cursor control or keypad mode (cf. D7: col.2 l.22-31; col.3 l.11-18). On

this basis, D7 is found to disclose implicitly a control unit, i.e. a conventional computer processor, which generates an operation signal on the basis of an input signal received from the input device and which is configured to switch between two different input modes as recited in claim 1.

- 3.4 According to D7, when the system enters the cursor control mode movements of the input device across the sensor surface are translated into appropriate cursor movements (cf. D7: col.2 l.46-50; col.4 l.6-10). On this basis, the board judges that the "cursor control" mode of D7 is a coordinate input mode as specified in claim 1 wherein coordinate data corresponding to the movement of the user's finger and an operation signal on the basis of the coordinate data are generated.
- 3.5 When the system of D7 is in the keypad control mode the keypad command associated with the touch location is executed (cf. D7: col.1 l.56-63; col.2 l.31-38; col.3 l.51-58). On this basis, the board judges that the "keypad control" mode of D7 is an indication-mark input mode wherein an input signal corresponding to an item represented by the indication mark and an operation signal on the basis of the input signal are generated as recited in claim 1.
- 3.6 D7 further discloses that the cursor control mode is entered when lateral movement of a predetermined distance is sensed before a preestablished time period, i.e. the so-called "button timer" period has expired (cf. D7: col.3 l.59 - col.4 l.19). On this basis D7, is found to disclose that the coordinate input mode is set

when the position at which a user's finger touches the indicator sheet on the input device is moved before a predetermined time interval elapses.

3.7 The board therefore finds that the subject-matter of claim 1 is distinguished from the disclosure of D7 in the following respects:

(i) D7 does not disclose that the X- and Y-direction detection electrodes of the flat input device are both formed of Ag (silver) paste, and are disposed such that they oppose each other in a matrix pattern with a resin sheet there-between.

(ii) D7 does not disclose that the indicator sheet is "laminated".

(iii) D7 does not disclose that the indication-mark input mode is set when one of the indication marks is pushed for a predetermined time interval.

3.8 In the board's judgement, the distinguishing features enumerated under (i) to (iii) in 3.7 above represent solutions to independent partial technical problems and may therefore be considered separately for the purposes of assessing inventive step.

3.9 With respect to the distinguishing features identified under (i) in 3.7 above, said features define a type of construction for a capacitive touchpad that is substantially identical to that of the capacitive "coordinate input apparatus" disclosed in D2 which comprises X- and Y-direction detection electrodes formed of silver paste (cf. D2: col.6 l.45-50) and

disposed such that they oppose each other in a matrix pattern with a resin sheet of, for example, polyethylene terephthalate (PET) therebetween (cf. D2: Abstract; col.1 1.28 - 45; col.6 1.15-60).

It is further noted that no particular technical considerations or technical effects which could be considered as non-obvious under the given circumstances are disclosed in or otherwise derivable from the passage of the description which provides support for the aforementioned claim features (cf. [0026]).

In view of the foregoing, the board finds that the distinguishing features identified under (i) in 3.7 above define a known type of construction for a capacitive touchpad whose deployment in the given context does not provide an inventive contribution to the claimed subject-matter.

- 3.10 The distinguishing feature identified under (ii) in 3.7 above relates to the construction of the indicator sheet. In the board's judgement, the specification to the effect that the sheet is "laminated" merely reflects a conventional type of construction for such an item. It is further noted that no particular technical considerations or technical effects which could be considered as non-obvious under the given circumstances are disclosed in or otherwise derivable from the passage of the description providing support for the aforementioned claim feature (cf. published application: [0028]).

In view of the foregoing, the board finds that specification in claim 1 to the effect that the

indicator sheet is "laminated" represents a straightforward, obvious design option and does not provide an inventive contribution to the claimed subject-matter.

- 3.11 The distinguishing feature identified under (iii) in 3.7 above relates to the setting of the indication mark input mode and specifies that this input mode is set when one of the indication marks is pushed for a predetermined interval.

According to a preferred embodiment of D7, the indication-mark input mode (i.e. the "keypad control" mode in the terminology of D7) is set when a switch or button under the touchpad is operated within a predetermined time interval after touchdown (cf. D7: col.2 1.31-38; col.2 1.50-55). In an alternative embodiment of D7, the indication-mark input mode is set using a tap gesture which is detected by sensing a touch lift-off within a predetermined time interval after touchdown (cf. D7: col.2 1.38-40; col.3 1.18-26).

The technical effect of the aforementioned distinguishing feature of claim 1 is to set the indication mark input mode in response to a type of user interaction with the flat input device which is different from that disclosed in D7. The objective partial technical problem solved by said feature vis-à-vis D7 may thus be formulated as how to provide an alternative method of setting the indication mark mode. In the board's judgement, the claimed solution does not involve an inventive step for the reasons given below.

3.12 D7 discloses that the switching of the input mode is effected using software which interprets the user's interaction with the touchpad to ascertain in which of the two available input modes the user wishes to operate the touchpad (cf. D7: col.2 l.25-31). D7 thus teaches the skilled person to program the system software to set the input mode based on the perceived intention of the user as indicated by his interaction with the input device.

With respect to setting the indication mark input mode, D7 discloses two preferred embodiments, viz. by operating a selection switch/button or by means of a tap gesture on the touchpad. Referring to the latter embodiment, the board takes the view that it would not require the exercise of inventive skill on the part of the skilled person to consider using alternative gestures to a tap gesture for setting the indication mark input mode.

3.13 D7 provides a hint to the effect that alternative gestures to a tap gesture are available insofar as it discloses in col.4 l.12-19 that either a "tap" or a "touch" can be interpreted as equivalent to the click or push of a button and that either of the aforementioned gestures can be employed by a user to perform selection actions.

Although the term "touch" is not defined in more detail in D7, the same term is used as an apparent synonym for "push" in [0043] of the present application where it is stated that the control unit switches between the two input modes "by determining whether "a finger or the like touches one of the input positions shown by the

indication marks 8 for a predetermined time interval or the finger or the like moves before the predetermined time interval elapses" (emphasis added).

In the given context the board concludes that the terms "touch" and "push" can be interpreted as having a substantially similar meaning whereby they both effectively denote the action of establishing contact between the operating member (e.g. the user's finger) and the input device.

3.14 D7 discloses that in keypad mode the touchpad is programmed to recognise a "touch" in each area designated with an indication mark (cf. col.1 l.53-63; col.3 l.53-58) and that keypad entries can be made by "pressing" the appropriate keypad areas (cf. D7: col.4 l.40-45).

On this basis, the board judges that it would not require the exercise of inventive skill to recognise that a gesture such as "touching", "pushing" or "pressing" an indication mark represents a user action which is characteristic of the indication mark input mode and that, consequently, such a gesture can be considered indicative of an intent to use the input apparatus in this mode.

Under the given circumstances, the board finds that programming the mode-switching software of D7 to set the indication mark input mode in response to the pushing of an indication mark is a design choice freely available to the skilled person and represents an obvious alternative to using a "tap" gesture for setting this input mode as disclosed in D7.

3.15 It is noted with respect to the specification that the indication mark is pushed "for a predetermined time interval" as recited in claim 1, that no specific technical considerations or technical effects which could be considered as non-obvious under the given circumstances are disclosed in or otherwise derivable from the passages of the description supporting this specification (cf. application: [0033], [0043]).

In the board's judgement, it would be obvious in the context of detecting the pushing of an indicator mark to require that contact between the operating member and the touchpad persisted for certain minimum amount of time, i.e. in order to be sure that the contact was not accidental but that it actually reflected an intention on the part of the user to push the indication mark.

Hence, the specification that the indicator mark be pushed "for a predetermined time interval" is found to represent a obvious technical measure which does not require the exercise of inventive skill.

3.16 Having regard to the observations under 3.11 to 3.15 above, the board finds that the distinguishing feature identified under (iii) in 3.7 above does not provide an inventive contribution to the claimed subject-matter.

4. *Observations re appellant's submissions*

4.1 The appellant submitted that D7 teaches away from requiring an indication mark to be pushed for a predetermined time interval in order to set the

indication mark input mode as specified in claim 1 because, according to said document, the setting of the indication mark input mode is based on sensing the lift-off of the activating member before a predetermined time interval has elapsed.

- 4.2 It is noted in this regard that according to D7 the indication mark input mode is set in response to a tap gesture which is characterised by a touchdown on the touchpad surface followed by a lift-off shortly thereafter. In order to identify such a gesture it is therefore necessary to detect a lift-off within a predetermined time interval after touchdown.
- 4.3 The teaching of D7 in this respect does not, in the board's judgement, preclude the skilled person from choosing an alternative gesture for setting the indication mark input mode. As discussed in 3.14 above, the pushing of an indication mark represents an obvious design alternative to the tap gesture of D7 and the board judges that requiring the indicator mark be pushed for certain minimum amount of time, i.e. "for a predetermined time interval", does not involve the exercise of inventive skill in the given context.
- 4.4 In view of the foregoing, the board does not concur with the appellant's submissions to the effect that D7 teaches away from the claimed invention. Nor, in the board's judgement, would the disclosure of said document otherwise dissuade the skilled person from modifying the setting of the indication mark input mode in the manner required to arrive at the subject-matter of claim 1.

- 4.5 The appellant also argued to the effect that setting the indication mark input mode as specified in claim 1 was more convenient for the user as it did not require a lift-off of the activating member within a predetermined time interval and that this would also be likely to result in less wear and tear on the surface of the flat input device compared to use of a tap gesture as taught by D7.
- 4.6 It is noted in this regard that there is no objective basis for concluding that a user would necessarily find the method of setting the indication mark mode specified in claim 1 to be more convenient than using a tap gesture. Even if this were the case, the board takes the view that, in the given context, this would effectively reflect a subjective preference on the part of the user which would not form a valid basis for a technical and inventive contribution over the prior art.
- 4.7 The appellant's submissions to the effect that setting the indication mark mode as specified in claim 1 would be likely to result in less wear and tear on the surface of the flat input device are, in the board's judgement, purely speculative and lack any objective basis in the application as filed.
- 4.8 In view of the foregoing, the appellant failed to convince the board that the use of a pushing action to set the indication mark mode as specified in claim 1 provided any advantageous technical effects compared to the use of a tap gesture as taught by D7.
- 4.9 In its observations concerning D7 the appellant also submitted that claim 1 specified that the user's finger

touched the indicating unit whereas according to Fig. 2A of D7, the indicating unit ("keypad template 28") was positioned below the glass substrate of the touchpad and thus could not be touched by the user's finger. It is noted in this regard, that although the embodiment illustrated in Fig. 2A of D7 shows the indicating unit positioned below the glass substrate of the touchpad, the text relating to said figure states that the template may be placed under or over the surface of the touchpad as appropriate (cf. D7: col.3 1.53-58). On this basis, the board concludes that D7 includes within its disclosure an embodiment in which the indicating unit is placed over the surface of the touchpad and can be touched by the user's finger.

5. In view of the foregoing, claim 1 of the main request is found to lack an inventive step and the request is therefore not allowable.

First auxiliary request

6. *Inventive step*

- 6.1 Claim 1 of the first auxiliary request differs from claim 1 of the main request in that it specifies that the input apparatus comprises display means and is configured to provide a determination operation to select an item from a menu on the display means, which determination operation is executed by softly hitting the indicator sheet on the input device by a user's finger, and to distinguish the determination operation from the pushing operation to set the indication-mark input mode, on the basis of a difference between changes in the capacitance per unit of time.

- 6.2 The additional features of claim 1 referred to in 6.1 above relate to an embodiment in which a tapping gesture, executed by softly hitting the surface of the flat input device, is used to perform a selection action, e.g. selecting an item from a menu shown on a display, when the apparatus is in cursor input mode as disclosed in [0037] to [0038].
- 6.3 The apparatus of D7 comprises a display (cf. D7: Fig. 1; 28-30). D7 further discloses that a selection operation such as icon selection or menu pulldown can be performed using a tapping gesture (col.4 l.12-14). On this basis, D7 is found to disclose that the input apparatus is configured to provide a determination operation to select an item on the display means, which determination operation is executed by softly hitting the indicator sheet on the input device by a user's finger.
- 6.4 D7 does not disclose that the item is selected from a menu nor does it disclose that the determination operation is distinguished from the pushing operation to set the indication-mark input mode, on the basis of a difference between changes in the capacitance per unit of time. In the board's judgement these differences represent obvious solutions to further independent partial technical problems and do not provide an inventive contribution to the claimed subject matter for the reasons given below.
- 6.5 Whereas D7 only refers explicitly to "icon selection" and "menu pulldown", the board judges that, following a selection operation resulting in menu pulldown there

arises a further obvious requirement to support a selection operation with respect to an item on the menu. Thus, in the context of a conventional menu-based graphical user interface, the specification to the effect that the determination operation is used to select an item from a menu is found to be an obvious design choice.

- 6.6 The specification to the effect that the determination operation is distinguished from the pushing operation on the basis of a difference between changes in the capacitance per unit of time solves the further partial technical problem of how to configure the apparatus to distinguish between these two input gestures.
- 6.7 In the board's judgement, the skilled person would not require the exercise of inventive skill in order to arrive at the claimed solution to this partial technical problem in the light of D4.
- 6.8 D4 discloses a capacitance-based keyboard and pointing assembly which can operate in both a cursor control input mode, also referred to as "pointing mode", and an indication mark input mode, referred to as "typing mode" (cf. D4: col.6 l.50 - 52). The input apparatus of D4 is configured to distinguish between pushing actions, i.e. manual depression of keys, associated with the indication mark input mode (cf. D4: col.6 l.64 - col.7 l.9) and tapping actions, i.e. partial depression of keys, associated with performing selection actions in the cursor control mode (cf. D4: col.7 l.50 - col.8 l.10). Given that the apparatus of D4 capacitively senses the velocity of the finger depressing the key and generates a signal based on sensed capacitance

changes and indicative of the keystroke velocity and acceleration (cf. D4: col.3 l.23-32; col.6 l.9-25; col.6 l.64 - col.7 l.3), it is implicit in the disclosure of D4 that pushing actions and tapping actions are distinguished on the basis of a difference between changes in the capacitance per unit of time, particularly in view of the fact that parameters such as velocity and acceleration involve the dimension of time.

- 6.9 In the board's judgement, the skilled person faced with the stated task of configuring the input apparatus of D7 to distinguish between a gesture intended to perform a menu selection action in coordinate input mode (i.e. the "determination"/"tapping" operation) and a gesture intended to set the indication mark input mode (i.e. the "pushing" operation) would not require the exercise of inventive skill to recognise that the aforementioned gestures have inherently different physical characteristics and that, consequently, the signals which they generate will reflect these characteristics. More specifically, since the tapping operation involves "softly hitting" the surface of the input device (cf. application: [0037]) it inherently involves a less forceful movement of the finger with respect to the surface of the input device than the pushing action used to set the indication mark input mode.

Under the given circumstances, the board judges that it would be obvious to distinguish between said gestures on the basis of the differences in the corresponding signals generated in response to the interaction of the user's finger with the input device. Where the input device is of the capacitive type it would further be

obvious to base the distinguishing on a difference between changes in the capacitance per unit of time, in particular having regard to the disclosure of D4 as discussed in 6.8 above.

6.10 On the basis of the preceding observations, the board finds that the additional features of claim 1 of the first auxiliary request noted in 6.1 above do not provide an inventive contribution to the claimed subject-matter.

7. *Observations re appellant's submissions*

7.1 The appellant submitted that D4 did not relate to a flat input device such as a touchpad but rather an input device having a capacitance based sensing system comprising a plurality of transceiver pads and that, consequently, the skilled person would not combine its disclosure with that of D7. The board does not, however, concur with the appellant's submissions in this regard for the reasons which follow.

7.2 As noted in 6.8 above, D4 relates to a capacitance-based keyboard and pointing assembly which can operate in both a cursor control input mode and an indication mark input mode. Although the input apparatus of D6 which comprises a plurality of capacitive transceiver pads differs from a flat input device like a touchpad in that it cannot generate a high resolution, i.e. substantially continuous, coordinate trace in the coordinate input mode, it can nevertheless generate a lower resolution coordinate trace with discrete coordinate points corresponding to the individual transceiver pads (i.e. keys). Hence, despite its

somewhat different construction, the input apparatus of D4 provides functionality which is substantially similar to that of a flat input device such as a touchpad.

7.3 The board thus finds that the skilled person faced with the task of configuring a touchpad device of the type disclosed in D7 to distinguish between different types of input gestures would consult D4 and take due account of the relevant elements of the disclosure of the latter document as discussed under 6.8 above.

8. In view of the foregoing, claim 1 of the first auxiliary request is found to lack an inventive step and the request is therefore not allowable.

Second auxiliary request

9. *Inventive step*

9.1 Claim 1 of the second auxiliary request differs from claim 1 of the main request in that it additionally specifies that the indicator sheet is formed in a shape having concavities and convexities such that regions at which the indication marks are disposed protrude upward.

9.2 The passage of the description providing support for this additional specification is [0029], according to which the indicator sheet may be formed in a shape having concavities and convexities such that regions at which the indication marks 8 are disposed protrude upward. It is further stated that alternatively, as shown in Fig. 3, projecting members formed of rubber or the like may be attached onto the surface of the

indicator sheet, and characters, numbers, symbols, etc., may be formed on the surface of the projecting members by printing or transferring.

- 9.3 The specification that the indicator sheet is formed in a shape having concavities and convexities such that regions at which the indication marks are disposed protrude upward is thus presented in the application as originally filed as a mere design option and as an alternative to providing an indicator sheet with projecting members formed of rubber or the like attached onto its surface. No particular technical considerations or technical effects which could be invoked in support of an inventive step are disclosed in relation to the claimed design option or are otherwise derivable from the cited passage of the description.
- 9.4 In the letter dated 13 April 2011, the appellant submitted *inter alia* that the indicator sheet recited in claim 1 did not comprise any holes or entry protrusions in contrast to the indicator sheet disclosed in D1 and thus allowed the input apparatus to be formed as being waterproof since it did not comprise any openings allowing fluid to enter into the apparatus. The board cannot, however, identify any support in the description for the appellant's assertions in this regard and the application as filed is silent in relation to the alleged technical effects referred to by the appellant.
- 9.5 Under the given circumstances, the board finds that the aforementioned specification concerning the indicator sheet is a matter of obvious design choice and does not

provide an inventive contribution to the subject-matter of claim 1.

10. In view of the foregoing, claim 1 of the second auxiliary request is found to lack an inventive step and the request is therefore not allowable.

Concluding remarks

11. In the absence of an allowable request the appeal must be dismissed.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar:

The Chair:

K. Götz

A. Ritzka