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Datasheet for the decision of 15 March 2013

Case Number: T 1900/09 - 3.5.05

Application Number: 05013803.1

Publication Number: 1607852

IPC: G06F 3/033, G06K 11/06

Language of the proceedings: EN

Title of invention:
Object position detector with edge motion feature and gesture recognition

Applicant:
Synaptics Incorporated

Headword:
Object position detector/SYNAPTICS

Relevant legal provisions:
EPC Art. 52(1), 56
EPC R. 112(2)

Keyword:
"Inventive step - yes, after amendment (fourth auxiliary request)"
"Substantial procedural violation - no"
"Re-imbursement of appeal fee - no"

Decisions cited:
-

Catchword:
-

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Beschwerdekammern | Boards of Appeal | Chambres de recours

Case Number: T 1900/09 - 3.5.05

D E C I S I O N
of the Technical Board of Appeal 3.5.05
of 15 March 2013

Appellant: (Applicant)
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Decision under appeal:
Decision of the Examining Division of the European Patent Office posted 9 February 2009 refusing European patent application No. 05013803.1 pursuant to Article 97(2) EPC.

Composition of the Board:

Chair: A. Ritzka
Members: P. Corcoran
F. Blumer

Summary of Facts and Submissions

I. This appeal is against the decision of the examining division to refuse the European patent application no. 05 013 803.1, publication no. EP 1 607 852. The decision was announced during oral proceedings on 23 January 2009 with written reasons being dispatched on 9 February 2009.

II. The decision under appeal was based on a request comprising a set of claims 1 to 9 filed with the letter of 16 December 2008. The examining division found that claim 1 of said request lacked an inventive step in the light of the following documents:

D1: EP 0 490 001 A;

D2: US 4 914 624.

III. Notice of appeal was received at the EPO on 3 April 2009 with the appropriate fee being paid on the same date. A statement setting out the grounds of appeal was received at the EPO on 8 June 2009. With the statement setting out the grounds of appeal the appellant requested that the decision under appeal be set aside and that a patent be granted on the basis of claims 1 to 9 filed with the letter dated 16 December 2008 or on the basis of first and second auxiliary requests comprising claims 1 to 9 and filed with the written statement. The appellant further requested the refund of the appeal fee due to an alleged procedural violation on the part of the examining division.

IV. In a communication accompanying a summons to oral proceedings, the board made reference *inter alia* to the following additional prior art documents which it

considered to be of relevance to the question of inventive step:

D4a: GB 2 139 762 A

D4b: B. Donnelly, "Mobile professional computer system uses micro disks and memory capsules", Electronics Industry, Vol.7, No.9, September 1983, pp.9 and 11, ISSN: 0307-2401.

D4a and D4b relate to a portable computing device which was developed and marketed by the Gavilan Computer Corporation. D4a is cited as a reference in US 5 543 591 which is related to the present application insofar as it claims priority from the same US application, *viz.* No. 320158 filed on 7 October 1994. A family member of D4a, *viz.* FR 2544103, was cited in the search report of WO 96/24095 which is referred to in item 29 of the written statement setting out the grounds of appeal.

V. In its communication, the board expressed the preliminary opinion that the appellant's requests were not allowable. The board noted *inter alia* that the question of inventive step might require consideration in the light of the prior art of D4a and D4b.

VI. With a letter dated 1 February 2013, the appellant filed a further auxiliary request designated as the third auxiliary request.

VII. During oral proceedings held on 15 March 2013, the appellant filed a further auxiliary request designated as the fourth auxiliary request. After discussion with the board, the third auxiliary request filed with the letter dated 1 February 2013 was withdrawn.

VIII. The appellant requested that the decision under appeal be set aside and that a patent be granted on the basis of the main request as filed with the statement setting out the grounds of appeal dated 5 June 2009, or, subsidiarily, on the basis of the first auxiliary request or the second auxiliary request, both as filed with the statement setting out the grounds of appeal, or on the basis of the further auxiliary request which had been filed as the fourth auxiliary request during the oral proceedings before the board. The appellant further requested the refund of the appeal fee.

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

"A method for responding to a tap gesture made on a touch pad (10) having a plurality of pre-defined regions (288, 290, 292, 294, 296) in a touch-sensing system providing information to a host, the method including the steps of:

detecting an occurrence of a tap gesture made by a conductive object on touch pad (10); and

if it is detected that said occurrence of said tap gesture has occurred, sending a signal to said host indicating said occurrence of said tap gesture; characterised by:

said detecting said occurrence of a tap gesture being comprised of:

comparing an amount of time said conductive object is present on said touch pad with a reference amount of time; and

comparing an amount of motion made by said conductive object while it is present on said touch pad with a reference amount of motion;

wherein said occurrence of said tapping gesture is detected if said amount of time said conductive object is present on said touch pad is less than said reference amount of time and if said amount of motion made by said conductive object while it is present on said touch pad is less than said reference amount of motion; and by:

determining if said occurrence of said tap gesture occurred in one of said pre-defined regions (288, 290, 292, 294, 296) of said touch pad (10) and, if so, also indicating said one of said pre-defined regions (288, 290, 292, 294, 296) in which said occurrence of said tap gesture occurred to said host."

Claim 7 of the request is directed towards a device including a touch pad that performs the method of the preceding claims.

X. Claim 1 of the first auxiliary request differs from the corresponding claim of the main request in that the introductory part of said claim 1 defines the matter for which protection is sought in the following terms: "A method for providing information to a host in response to a tap gesture made on a touch pad (10) having a plurality of pre-defined regions (288, 290, 292, 294, 296) in a touch-sensing system ...".

XI. Claim 1 of the second auxiliary request differs from the corresponding claim of the first auxiliary request in that the introductory part of said claim 1 specifies a touchpad "having a surface divided into two or three pre-defined regions".

XII. Claim 1 of the fourth auxiliary request reads as follows:

"A method for providing information to a host in response to presence of a conductive object on a touch pad (10) having a plurality of pre-defined regions (288, 290, 292, 294, 296) in a touch-sensing system, the method including the steps of:

detecting a motion of the conducting object on the touch pad in any of the pre-defined regions and providing position information representing changes in position of the conductive object to the host;

detecting an occurrence of a tap gesture made by a conductive object on touch pad (10); and

if it is detected that said occurrence of said tap gesture has occurred, providing information to said host indicating said occurrence of said tap gesture; wherein

said detecting said occurrence of a tap gesture comprises:

comparing an amount of time said conductive object is present on said touch pad with a reference amount of time; and

comparing an amount of motion made by said conductive object while it is present on said touch pad with a reference amount of motion;

and said occurrence of said tapping gesture is detected if said amount of time said conductive object is present on said touch pad is less than said reference amount of time and if said amount of motion made by said conductive object while it is present on said touch pad is less than said reference amount of motion; and

determining in which one of said pre-defined regions (288, 290, 292, 294, 296) of said touch pad (10)

said tap gesture occurred and also providing information indicating said one of said pre-defined regions (288, 290, 292, 294, 296) in which said occurrence of said tap gesture occurred to said host."

Claim 3 of the request is directed towards a device including a touch pad that performs the method of the preceding claims.

XIII. Insofar as they are relevant to the present decision, the written and oral submissions made on behalf of the appellant during the present appeal proceedings, may be summarised as follows:

(i) At the claimed priority date, the mouse was the most common input device used with so-called WIMP ("Windows, Icons, Menus, Pointer") graphical user interfaces. A mouse is an input device which effectively has two separate input channels:
(a) it is used for performing cursor control operations by means of its movement over a surface; and
(b) it is additionally provided with a plurality of binary switches in the form of buttons which can be used for performing selection operations and similar tasks.

(ii) Although the mouse is a convenient input device it also has some drawbacks and this has led to the development of alternative input devices, in particular for portable computers. One known alternative is a combination of a touch pad (or "track pad") with buttons. A general aim of designers of such touch pad systems is to enable a

user to emulate actions typically performed using a mouse. Touch pad and button combinations are, however, not as easy to use as a computer mouse, particularly for novice users.

(iii) The present invention according to claim 1 of the main request relates to a touchpad which provides cursor movement signals and can at the same time be used to emulate a plurality of mouse button functions. This is achieved by subdividing the touchpad area into a plurality of pre-defined regions each of which corresponds to a particular mouse button function. Cursor movement signals are provided by moving a conductive object across the surface of the touch pad and the mouse button functions are activated when a tap gesture is recognised on the corresponding pre-defined region of the touch pad.

(iv) The prior art of D4a and D4b relates to a portable computer which comprises a touch pad input device. D4a in particular discloses a touch pad comprising a cursor control area and a plurality of further areas which are allocated to specific "push-button" functions. D4a also discloses the use of tap gestures to generate control signals. A tap gesture is recognised by measuring the time and movement parameters of a contact.

(v) The teaching of D4a is, however, limited to deploying a tap gesture to execute an operation inside the cursor control area at the point where the cursor has been positioned. There is no disclosure or suggestion to partition the cursor

control area into a plurality of pre-defined regions each of which corresponds to a separate command function.

(vi) D4a discloses a plurality of pre-defined regions in the form of discrete "push-button" areas which are physically delimited from the cursor control area and from each other using a "spacer". These "push-button" areas are not used to generate cursor movement signals nor would it be obvious to use them for this purpose. Moreover, according to D4a, these areas are immediately responsive to a contact or "push". There is no disclosure or suggestion to the effect that they are responsive to tap gestures.

(vii) Claim 1 of the first auxiliary request seeks protection for substantially the same subject-matter as claim 1 of the main request and differs therefrom only in that it has been formulated to emphasise that it relates to a method of providing information to a host using a touch sensitive input device.

(viii) Claim 1 of the second auxiliary request specifies a touchpad having a surface divided into two or three pre-defined regions. This limitation is intended to emphasise the distinction over D4a which discloses a single cursor control area and a plurality of separately delimited regions that are allocated to specific "push-button" functions but are not used to generate cursor movement signals. In the preferred embodiment of D4a, there are eight "push-button" areas in addition to the cursor control area, i.e. a total of nine pre-defined regions.

Starting from D4a, it would not be obvious to reduce the number of pre-defined regions to two or three.

(ix) Claim 1 of the fourth auxiliary request includes the additional feature of detecting motion of the conducting object on the touch pad in any of the pre-defined regions and providing position information representing changes in position of the conductive object to the host. This additional feature specifies more clearly that the touch pad is used for simultaneously providing cursor movement signals and emulating a plurality of mouse button functions over a single touch sensitive area subdivided into a plurality of pre-defined regions.

The claim defines a single touch pad area which can generate cursor movement signals in a seamless manner and can further provide signals corresponding to a plurality of mouse buttons in response to tap gestures on pre-defined regions of the touch pad area.

Although, from a hypothetical point of view, the skilled person could modify the system of D4a by extending the generation of cursor movement signals to other regions of the touch pad, this is not a modification which he would have contemplated. Moreover, even if such a modification were attempted it would not result in the seamless generation of cursor movement signals provided by the present invention. The cursor movement signal resulting from such a modification to D4a would be

"jerky" due to the transitions caused by moving across region boundaries.

(x) Concerning the alleged procedural violation, it was submitted that the inventive step objection raised in the decision under appeal could not be clearly understood and that it appeared to be a decision based on some kind of preconceived policy which was not properly reasoned.

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

Reasons for the Decision

1. The appeal is admissible (cf. Facts and Submissions, item III. above).

Preliminary observations

2. *Closest prior art*

2.1 It is common ground that D4a represents the closest prior art document to the subject matter of the independent claims of the appellant's requests.

2.2 D4a discloses a portable computer which comprises a touch sensitive input device in the form of a touch pad having a plurality of pre-defined regions. In the preferred embodiment of D4a (cf. D4a: Fig. 3; Abstract), the two dimensional area of the touch pad is spatially divided into an X-Y two-dimensional cursor control area (63), and a plurality of discrete button areas (65, 67, 69, 71, 73, 75, 77 and 79) adjacent the cursor control area which act as two position switches and generate control signals of the type for which discrete push button switches are generally employed.

2.3 D4a further discloses the use of tap gestures in the two dimensional cursor control area (63) to generate control signals (cf. D4a: Abstract; p.1 l.46-55; p.1 l.126 - p.2 l.30; p.6 l.1-53). Movement of a cursor on the display screen of the computer system is controlled in response to a user's finger moving over the cursor control area. Once the cursor has been correctly positioned, a short tap on the cursor control area generates an execution signal to instruct the

computer to carry out the instructions determined by the prior cursor movement. The tap gesture is recognised by measuring the time and movement parameters of the contact.

Main request

3. *Interpretation of claim 1*

3.1 Claim 1 of the main request is directed towards a method for responding to a tap gesture made on a touch pad having a plurality of pre-defined regions in a touch-sensing system providing information to a host.

3.2 According to the pre-characterising part of the claim, if an occurrence of a tap gesture made by a conductive object on the touch pad is detected, a signal is sent to the host indicating the occurrence of the tap gesture.

3.3 The characterising part of the claim includes a specification of the details of detecting the occurrence of a tap gesture, according to which an occurrence of a tap gesture is detected if the amount of time the conductive object is present on the touch pad is less than a reference amount of time and the amount of motion made by the conductive object while it is present on the touch pad is less than a reference amount of motion.

3.4 The characterising part of the claim concludes with a specification to the effect that, if a tap gesture occurred in one of the pre-defined regions of the touch

pad, the corresponding pre-defined region is indicated to the host.

3.5 In summary, claim 1 of the main request specifies a method according to which when a tap gesture occurs in one of a plurality of pre-defined regions of a touch pad, the occurrence of the tap gesture and the region of the touch pad in which it occurred are notified to the host.

3.6 It is particularly noted that the claim does not contain any specification relating to the use of the touch pad for generating and notifying a cursor movement signal to the host.

4. *Comparison with D4a*

4.1 In the board's judgement, D4a which discloses the detection of a tap gesture on a touch sensitive input device (cf. D4a: p.1 l.46-55; p.1 l.126 - p.2 l.30; p.6 l.1-53) discloses at least implicitly a method comprising all of the features of the pre-characterising part of claim 1 of the main request.

4.2 In the preferred embodiment of D4a, a tap gesture is recognised when the surface of the touch pad is touched for a time less than a predetermined reference time and the location touched on the surface changes by a distance less than a predetermined reference distance (cf. D4a: p.6 l.23-37; claim 4). D4a thus discloses detecting the occurrence of a tap gesture in a manner substantially identical to that specified in the characterising part of claim 1 of the main request, i.e. such that a tap gesture is detected if the amount of

time the conductive object is present on the touch pad is less than a reference amount of time and the amount of motion made by the conductive object while it is present on said touch pad is less than a reference amount of motion.

4.3 According to D4a, the recognition of the tap gesture takes place solely in the cursor control area. There is no disclosure to the effect that the occurrence of a tap gesture is determined in any of the other pre-defined regions of the touch pad.

5. *Inventive step*

5.1 Claim 1 of the main request is thus distinguished over D4a by the concluding feature of the claim according to which a determination is made if the tap gesture occurred in one of the pre-defined regions of the touch pad and, if so, an indication of the pre-defined region in which the tap gesture occurred is provided to the host.

5.2 Although there is no disclosure in D4a to the effect that the occurrence of a tap gesture is determined in a pre-defined region of the touch pad other than the cursor control area, the board holds that it would be an obvious modification of the teaching of D4a to extent the detection of a tap gesture to at least some of the other pre-defined regions of the touch pad.

5.3 These other pre-defined regions are described in D4a as "push button areas" and are disclosed as being responsive to a "closure", i.e. a touch interaction which depresses the corresponding region of the touch

pad (p.6 l.60-75). However, D4a states that the tap gesture detected in the cursor control area is used to generate "a push button like signal" (cf. D4a; p.6 l.38-47) which, in the board's judgement indicates that the specific type of touch interaction used to actuate the push button areas is a matter of design choice.

5.4 In the board's judgement, it would not require the exercise of inventive skill to consider using other types of touch interaction besides a simple "push" or depression to actuate the push button areas of the touch pad. The skilled person could be expected to choose the type of touch interaction depending on the particular type of application and the types of switch functionality it was desired to provide.

5.5 Given that the touchpad of the computer disclosed in D4a is evidently intended to provide "a 'mouse' type of cursor control" (cf. the related document D4b: p.11, section entitled "Touch panel provides cursor control"), the board holds that it would be an obvious desideratum to use some of the push button areas of the touch pad of D4a to emulate mouse button functionality. In the given context, the board judges that a tap gesture, as opposed to a simple depressive contact, would be an obvious design choice for implementing the click functionality typically associated with mouse buttons.

5.6 In view of the foregoing, the board takes the view that the skilled person would not require the exercise of inventive skill to modify the disclosure of D4a to extend the detection of tap gestures to at least some of the push button areas of the touch pad thereby

arriving at a method having all of the features of claim 1 of the main request.

6. *Observations concerning the appellant's submissions*

6.1 With respect to the appellant's submissions that in the preferred embodiment of D4a, the push button areas are physically delimited from each other and from the cursor control area by a spacer (cf. Facts and Submissions, item XIII(vi) above), the board notes that according to D4a there is a single touch pad assembly which extends over all regions, i.e. the touch pad of D4a includes the cursor control area and the push button areas (cf. D4a: p.3 l.84-99). Although the different areas can be delimited from each other using a spacer, it is explicitly stated that the use of a spacer is not essential (cf. D4a: p.3 l.106-109 of D4a). D4 thus teaches, or at least suggests, to the skilled person that it is not necessary to physically delimit the different areas of the touchpad from each other.

6.2 Concerning the appellant's submissions that the push button areas of D4a are not used to generate a cursor movement signal which is provided to the host (cf. Facts and Submissions, item XIII(vi) above), the board notes that claim 1 does not contain any specification which could be interpreted as requiring the generation of a cursor movement signal over all of the pre-defined regions (cf. 3.6 above). Said claim merely requires that if a tap gesture occurs in one of the pre-defined regions of the touch pad, the occurrence of the tap gesture and the corresponding pre-defined region are notified to the host.

6.3 Hence, the board was not convinced by the aforementioned submissions of the appellant that the subject-matter of claim 1 of the main request involved any non-obvious differences over the disclosure of D4a.

7. In view of the foregoing, the board judges that the subject matter of claim 1 of the main request does not involve an inventive step over D4a.

First auxiliary request

8. *Inventive step*

8.1 Claim 1 of the first auxiliary request seeks protection for substantially the same subject-matter as claim 1 of the main request and is merely formulated using somewhat different wording (cf. Facts and Submissions, item XIII(vii) above). Therefore, the finding under 7. above also applies to claim 1 of the first auxiliary request which is likewise judged not to involve an inventive step over D4a.

Second auxiliary request

9. *Claim 1*

9.1 Claim 1 of the first auxiliary request differs from claim 1 of the main request in that it specifies a touchpad having a surface divided into two or three pre-defined regions.

10. *Inventive step*

10.1 The appellant has essentially argued to the effect that D4a discloses a touch pad which is sub-divided into nine pre-defined regions and that it would not be obvious for the skilled person to reduce the number of pre-defined regions to two or three (cf. Facts and Submissions, item XIII(viii) above).

10.2 It is noted in this regard, that whereas the preferred embodiment of D4a discloses a touch pad which is sub-divided into nine pre-defined regions, i.e. the cursor control area and eight push button areas, D4a further states the following: "A larger or smaller number of discreet areas may be provided, depending upon the computer system application and the available size of the touch pad surface" (cf. D4a: p.3 l.91-95).

10.3 D4a thus teaches, or at least suggests to the skilled person, that a reduction in the number of pre-defined regions is a freely available design choice which does not require the exercise of inventive skill.

10.4 In particular, as indicated in 5.5 above, the board considers that it would represent an obvious desideratum for the skilled person to use the push button areas of the touch pad of D4a to emulate mouse button functionality. In the context of trying to satisfy this desideratum, the board judges that it would not require the exercise of inventive skill to arrive at a touch pad comprising a cursor control area and two push button areas for emulating mouse button functionality (i.e. a total of three pre-defined regions) thereby arriving at an arrangement which would

fall within the scope of claim 1 of the second auxiliary request.

10.5 In view of the foregoing, the board judges that claim 1 of the second auxiliary request does not involve an inventive step over the disclosure of D4a.

Fourth auxiliary request

11. *Claim 1*

Claim 1 of the first auxiliary request differs from claim 1 of the main request in that it has been amended by introducing a specification of "detecting a motion of the conductive object on the touch pad in any of the pre-defined regions and providing position information representing changes in position of the conductive object to the host".

11.1 Claim 1 of the fourth auxiliary request thus contains an explicit specification to the effect that a cursor movement signal is generated and provided to the host in response to the movement of the conductive object over all of the pre-defined regions of the touch pad (cf. Facts and Submissions, item XIII(ix) above).

11.2 In the board's judgement this amendment to claim 1 of the fourth auxiliary request is supported *inter alia* by [0216] to [0218] of the published application (corresponding to p.86 l.13 to p.87 l.7 of the application as originally filed). In particular, it is implicit from [0216] of the published application, which discloses the execution of a drag action across "tap zone" boundaries, that a cursor movement signal is

generated and provided to the host in response to the movement of the conductive object over all of the pre-defined regions ("tap zones") of the touch pad.

11.3 The board is therefore satisfied that claim 1 of the fourth auxiliary request clearly defines the essential technical features of the matter for which protection is sought in a manner supported by the original disclosure such that the requirements of Articles 84 and 123(2) EPC are complied with.

12. *Inventive step*

12.1 D4a discloses a single touch pad region, i.e. the cursor control area 63, which is used to generate and provide cursor movement signals to the host in response to the movement of a conductive object and which is further arranged to permit the detection of tap gestures which occur within this region.

12.2 Although the board considers that the skilled person would not require the exercise of inventive skill to modify the disclosure of D4a so as to extend the detection of tap gestures to at least some of the push button areas of the touch pad (cf. observations under 5.5 and 5.6 above), it does not consider that it would be obvious to additionally use said push button areas to generate and notify cursor movement signals to the host in response to the movement of a conductive object. Nor, can the board identify any plausible motivation for the skilled person to partition the cursor control area of D4a into a plurality of predefined regions as recited in claim 1 of the present request.

12.3 In view of the foregoing, the board judges that the combination of features recited in claim 1 of the fourth auxiliary request is not derivable in an obvious manner from D4a and that, consequently, the subject-matter of said claim involves an inventive step over the available prior art.

Request for reimbursement of the appeal fee

13. *Alleged procedural violation*

13.1 The board is not convinced by the appellant's submissions to the effect that the decision under appeal involved a substantial procedural violation due to the allegedly deficient reasoning of the decision (cf. Facts and Submissions, item XIII(x) above).

13.2 According to said decision, the application was refused because the subject-matter of independent claim 1 on file did not involve an inventive step.

13.3 In support of this finding, the decision refers to documents D1 and D2 which are said to disclose input devices supporting touch-based interactions and which are able "to recognize and differentiate between gestures mapped to different commands". This is followed by a line of argumentation based on generic considerations to the effect that defining gestures for interaction with such devices is inherently non-technical and the implementation of a defined gestural sequence to generate a desired sequence of commands does not involve an inventive step.

13.4 The board does not concur with the line of argumentation advanced by the examining division in the impugned decision. Nevertheless, even if the board takes the view that the reasons for the decision are not well-founded, this does not mean that the decision is not reasoned at all in the sense of Rule 111(2) EPC (formerly Rule 68(2) EPC 1973). Consequently, there is no procedural violation in this respect.

13.5 In view of the foregoing, the appellant's request for refund of the appeal fee is refused.

Conclusions

14. *Remittal to department of first instance*

14.1 Having regard to its finding noted under 12.3 above, the board decides to remit the case to the department of first instance with the order to grant a patent on the basis of the fourth auxiliary request.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. The case is remitted to the department of first instance with the order to grant a patent on the basis of the following documents:
   - claims 1-5, filed as Fourth Auxiliary Request during the oral proceedings before the Board.
   - description:
     - pages 1—11 and 13—116 as originally filed;
     - pages 12 and 117 as filed on 28 September 2007.
   - drawing sheets 1—26 as originally filed.

3. The request for refund of the appeal fee is refused.

The Registrar: The Chair:

G. Magouliotis A. Ritzka