EXHIBIT U

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:

Mark A. Della Bona et al.

Application No.: 08/381,471

Filing Date: January 31, 1995

For: A Method And An Apparatus For Contacting A Touch-Sensitive Cursor-Controlling Input Device To Generate Button Values Simulating The Button State Of A Mechanical Button Switch

Examiner: Raymond J. Bayerl

Art Unit: 2415

Assistant Commissioner for Patents
Washington, D.C. 20231

AMENDMENT

Sir:

In response to the Office Action mailed October 24, 1996, it is respectfully requested that the following amendments be entered.

IN THE CLAIMS

Please cancel claims 3-7, 9, 13-17, 19, and 21-25 without prejudice, and amend claims 1, 2, 8, 10-12, 18, 20, and 26 as follows:

1. (Amended) A method of [contacting] operating a touch-sensitive input device [to move a cursor on a display screen] of a computer system [and to change the value of a ButtonState variable to one of a first button value and a second button value, said

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ButtonState variable simulating a button state of a mechanical button switch, said method] comprising the steps of:

a) detecting contact intervals when [the] a user contacts the touch-sensitive input device;

b) detecting gap intervals between subsequent contact intervals; and

c) [moving the cursor on the display screen and changing the value of the ButtonState variable] distinguishing between a first cursor control operation, a second cursor control operation and a third cursor control operation based on the duration of said contact and gap intervals; and

d) reporting one of said first, second or third cursor control operations in accordance with said step of distinguishing.

2. (Amended) A method of using a touch-sensitive input device coupled to a computer system to move a cursor on a display screen of the computer system and to change the value of a ButtonState variable to one of a first button value and a second button value, said ButtonState variable simulating a button state of a mechanical button switch, said method comprising the steps of:

a) detecting a first contact interval when a user first contacts said touch-sensitive input device;

b) determining if said first contact interval lasts longer than a first predetermined maximum time interval; [and]

c) [if said first contact interval lasts longer than said first predetermined maximum time interval,] supplying positional data relating to the first contact interval to

said computer system to cause the cursor to move across said display screen if said first contact interval lasts longer than said first predetermined maximum time interval;[.]

d) setting the value of the ButtonState variable to the first button value if said first contact interval does not last longer than said first predetermined maximum time interval;

e) detecting whether a second contact interval follows said first contact interval in less than a second predetermined maximum time interval;

f) setting the value of the ButtonState variable to the second button value if said second contact interval does not follow said first contact interval in less than said second predetermined maximum time interval;

g) determining if said second contact interval lasts longer than a third predetermined maximum time interval if said second contact interval does follow said first contact interval in less than said second predetermined maximum time interval;

h) supplying positional data relating to the second contact interval to said computer system to cause the cursor to move across said display screen if said second contact interval lasts longer than said third predetermined maximum time interval;

i) detecting whether a third contact interval follows said second contact interval in less than a fourth predetermined maximum time interval;

j) setting the value of the ButtonState variable to the second button value if said third contact interval does not follow said second contact interval in less than said fourth predetermined maximum time interval;

k) determining if said third contact interval lasts longer than a fifth predetermined maximum time interval if said third contact interval does follow the second contact interval in less than said fourth predetermined maximum time interval; and

l) supplying positional data relating to the third contact interval to said computer system in order to maintain the cursor movements initiated by supplying positional data relating to the second contact interval to the computer system if said third contact interval lasts longer than said fifth predetermined maximum time interval.

A2

38. (Amended) The method of claim [7] 2 further comprising the step of setting the value of the ButtonState variable to the second button value if said third contact interval does not last longer than said fifth predetermined maximum time interval.

A3

40. (Amended) [The method of claim 9 further comprising the steps of:] A method of using a touch-sensitive input device coupled to a computer system to move a cursor on a display screen of the computer system and to change the value of a ButtonState variable to one of a first button value and a second button value, said ButtonState variable simulating a button state of a mechanical button switch, said method comprising the steps of:

a) detecting a first contact interval when a user first contacts said touch-sensitive input device;

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b) determining if said first contact interval lasts longer than a first predetermined maximum time interval; [and]

c) [if said first contact interval lasts longer than said first predetermined maximum time interval,] supplying positional data relating to the first contact interval to said computer system to cause the cursor to move across said display screen if said first contact interval lasts longer than said first predetermined maximum time interval;[.]

d) setting the value of the ButtonState variable to the first button value if said first contact interval does not last longer than said first predetermined maximum time interval;

13 cont.

e) detecting whether a second contact interval follows said first contact interval in less than a second predetermined maximum time interval;

f) setting the value of the ButtonState variable to the second button value if said second contact interval does not follow said first contact interval in less than said second predetermined maximum time interval;

g) determining if said second contact interval lasts longer than a third predetermined maximum time interval if said second contact interval does follow said first contact interval in less than said second predetermined maximum time interval;

h) supplying positional data relating to the second contact interval to said computer system to cause the cursor to move across said display screen if said second contact interval lasts longer than said third predetermined maximum time interval;

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i) setting the value of the ButtonState variable to the second button value if said second contact interval does not last longer than said third predetermined maximum time interval;

j) setting the value of the ButtonState variable to the first button value;

k) detecting whether a third contact interval follows said second contact interval in less than a fourth predetermined maximum time interval;

l) setting the value of the ButtonState variable to the second button value if said third contact interval does not follow said second contact interval in less than said fourth predetermined maximum time interval;

A3 cont.

[a)] m) [if said third contact interval does follow said second contact interval in less than said fourth predetermined maximum time interval,] determining if said third contact interval lasts longer than a fifth predetermined maximum time interval if said third contact interval does follow said second contact interval in less than said fourth predetermined maximum time interval; and

[b)] n) supplying positional data relating to the third contact interval to said computer system to cause the cursor to move across said display screen if said third contact interval lasts longer than said fifth predetermined maximum time interval.

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11. (Amended) An apparatus for [contacting] operating a touch-sensitive input device [to move a cursor on a display screen] of a computer system [and to change the value of a ButtonState variable to one of a first button value and a second button value, said ButtonState variable simulating a button state of a mechanical button switch, said apparatus] comprising:

a) means for detecting contact intervals when [the] a user contacts the touch-sensitive input device;

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b) means for detecting gap intervals between subsequent contact intervals; and

c) means for [moving the cursor on the display screen and changing the value of the ButtonState variable] distinguishing between a first cursor control operation, a second cursor control operation and a third cursor control operation based on the duration of said contact and gap intervals and for reporting one of said first, second or third cursor control operations in accordance therewith.

6 1/2. (Amended) An apparatus for using a touch-sensitive input device coupled to a computer system to move a cursor on a display screen of the computer system and to change the value of a ButtonState variable to one of a first button value and a second button value, said ButtonState variable simulating a button state of a mechanical button switch, said apparatus comprising:

a) circuitry for detecting a first contact interval when a user first contacts said touch-sensitive input device;

b) circuitry for determining if said first contact interval lasts longer than a first predetermined maximum time interval; [and]

c) circuitry for supplying positional data relating to the first contact interval to said computer system to cause the cursor to move across said display screen if said first contact interval lasts longer than said first predetermined maximum time interval[.];

d) circuitry for setting the value of the ButtonState variable to the first button value if said first contact interval does not last longer than said first predetermined maximum time interval;

e) circuitry for detecting whether a second contact interval follows said first contact interval in less than a second predetermined maximum time interval;

f) circuitry for setting the value of the ButtonState variable to the second button value if said second contact interval does not follow said first contact interval in less than said second predetermined maximum time interval;

g) circuitry for determining if said second contact interval lasts longer than a third predetermined maximum time interval, if said second contact interval does follow said first contact interval in less than said second predetermined maximum time interval;

h) circuitry for supplying positional data relating to the second contact interval to said computer system to cause the cursor to move across said display screen, if said second contact interval lasts longer than said third predetermined maximum time interval;

i) circuitry for detecting whether a third contact interval follows said second contact interval in less than a fourth predetermined maximum time interval;

j) circuitry for setting the value of the ButtonState variable to the second button value if said third contact interval does not follow said second contact interval in less than said fourth predetermined maximum time interval;

k) circuitry for determining if said third contact interval lasts longer than a fifth predetermined maximum time interval, if said third contact interval does follow the second contact interval in less than said fourth predetermined maximum time interval; and

l) circuitry for supplying positional data relating to the third contact interval to said computer system in order to maintain the cursor movements initiated by

supplying positional data relating to the second contact interval to the computer system, if said third contact interval lasts longer than said fifth predetermined maximum time interval.

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17 18. (Amended) The apparatus of claim [17] 12 further comprising circuitry for setting the value of the ButtonState variable to the second button value if said third contact interval does not last longer than said fifth predetermined maximum time interval.

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19 20. (Amended) [The apparatus of claim 19 further comprising:] An apparatus for using a touch-sensitive input device coupled to a computer system to move a cursor on a display screen of the computer system and to change the value of a ButtonState variable to one of a first button value and a second button value, said ButtonState variable simulating a button state of a mechanical button switch, said apparatus comprising:

a) circuitry for detecting a first contact interval when a user first contacts said touch-sensitive input device;

b) circuitry for determining if said first contact interval lasts longer than a first predetermined maximum time interval;

c) circuitry for supplying positional data relating to the first contact interval to said computer system to cause the cursor to move across said display screen if said first contact interval lasts longer than said first predetermined maximum time interval;

d) circuitry for setting the value of the ButtonState variable to the first button value if said first contact interval does not last longer than said first predetermined maximum time interval;

e) circuitry for detecting whether a second contact interval follows said first contact interval in less than a second predetermined maximum time interval;

f) circuitry for setting the value of the ButtonState variable to the second button value if said second contact interval does not follow said first contact interval in less than said second predetermined maximum time interval;

g) circuitry for determining if said second contact interval lasts longer than a third predetermined maximum time interval, if said second contact interval does follow said first contact interval in less than said second predetermined maximum time interval;

h) circuitry for supplying positional data relating to the second contact interval to said computer system to cause the cursor to move across said display screen, if said second contact interval lasts longer than said third predetermined maximum time interval;

i) circuitry for setting the value of the ButtonState variable to the second button value if said second contact interval does not last longer than said third predetermined maximum time interval;

j) circuitry for setting the value of the ButtonState variable to the first button value;

k) circuitry for detecting whether a third contact interval follows said second contact interval in less than a fourth predetermined maximum time interval;

l) circuitry for setting the value of the ButtonState variable to the second button value if said third contact interval does not follow said second contact interval in less than said fourth predetermined maximum time interval;

[a)] m) circuitry for determining if said third contact interval lasts longer than a fifth predetermined maximum time interval, if said third contact interval does follow

said second contact interval in less than said fourth predetermined maximum time interval; and

[b)] n) circuitry for supplying positional data relating to the third contact interval to said computer system to cause the cursor to move across said display screen if said third contact interval lasts longer than said fifth predetermined maximum time interval.

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76. [The computer system of claim 25, wherein said apparatus further comprises:] A computer system comprising:

a) a bus;

b) a touch-sensitive input device coupled to said bus;

c) an apparatus for using said touch-sensitive input device to move a cursor on a display screen of the computer system and to change the value of a ButtonState variable to one of a first button value and a second button value, said ButtonState variable simulating a button state of a mechanical button switch, said apparatus including:

1) circuitry for detecting a first contact interval when a user first contacts said touch-sensitive input device;

2) circuitry for determining if said first contact interval lasts longer than a first predetermined maximum time interval;

3) circuitry for supplying positional data relating to the first contact interval to said computer system to cause the cursor to move across said display screen if said first contact interval lasts longer than said first predetermined maximum time interval;

4) circuitry for setting the value of the ButtonState variable to the first button value if said first contact interval does not last longer than said first predetermined maximum time interval;

5) circuitry for detecting whether a second contact interval follows said first contact interval in less than a second predetermined maximum time interval;

6) circuitry for setting the value of the ButtonState variable to the second button value if said second contact interval does not follow said first contact interval in less than said second predetermined maximum time interval;

7) circuitry for determining if said second contact interval lasts longer than a third predetermined maximum time interval, if said second contact interval does follow said first contact interval in less than said second predetermined maximum time interval;

8) circuitry for supplying positional data relating to the second contact interval to said computer system to cause the cursor to move across said display screen, if said second contact interval lasts longer than said third predetermined maximum time interval;

9) circuitry for detecting whether a third contact interval follows said second contact interval in less than a fourth predetermined maximum time interval;

10) circuitry for setting the value of the ButtonState variable to the second button value if said third contact interval does not follow said second contact interval in less than said fourth predetermined maximum time interval;

[a)] 11) circuitry for determining if said third contact interval lasts longer than a fifth predetermined maximum time interval, if said third contact interval does

follow the second contact interval in less than said fourth predetermined maximum time interval; and

[b)] 12) circuitry for supplying positional data relating to the third contact interval to said computer system in order to maintain the cursor movements initiated by supplying positional data relating to the second contact interval to the computer system, if said third contact interval lasts longer than said fifth predetermined maximum time interval.

Please add new claim 30 as follows.

30. (New) A method of operating a computer system having a touch-sensitive input apparatus, comprising the steps of:

detecting a plurality of contact and gap intervals associated with user contacts of said touch-sensitive input apparatus;

determining whether said contact and gap intervals represent an operation type chosen from the list consisting of: a cursor manipulation operation, a single click operation, a multi-click operation, a click-and-drag operation, a multi-click-and-drag operation, a drag operation, or a sticky drag operation; and

reporting said operation type to said computer system in accordance with said step of determining.

REMARKS

Reconsideration of this application, as amended, is respectfully requested. Claims 3-7, 9, 13-17, 19 and 21-25 have been canceled. Claims 1, 2, 8, 10-12, 18, 20, and 26-30 are currently pending.

In the Office Action of October 24, 1996, claims 1-6, 9, 11-16, 19 and 21-25 were rejected under 35 U.S.C. § 102(e) as being anticipated by Calder et al., U.S. Patent No. 5,432,531 ("Calder"). Claims 7, 8, 10, 17, 18, 20 and 26-29 were objected to as being

dependent upon a rejected base claim, however, it was indicated that these claims would be allowable if rewritten in independent form.

Claim 2 has been amended to include all of the limitations of claim 7. Accordingly, it is respectfully submitted that claim 2 is in condition for allowance. Claim 8 has been amended to depend from claim 2 and is also in condition for allowance.

Claims 10, 20 and 26 have been rewritten as independent claims and are respectfully submitted to be in condition for allowance. Claims 27-29 depend from claim 26 and are also in condition for allowance.

Claim 12 has been amended to include all of the limitations of claim 17 and claim 18 has been amended to depend from claim 12. These claims are respectfully submitted to be in condition for allowance.

Claim 1 has been amended to recite a method of operating a touch sensitive input device of a computer system and includes the steps of detecting and reporting one of a first, second or third cursor control operation based upon the duration of contact and gap intervals. It is respectfully submitted that these features are neither taught by nor suggested by Calder. Calder describes a coordinate processor for a computer system input device which provides for positioning a cursor on a display and for issuing a button click command to the computer system. [Calder at col. 2, ll. 10-24.] The coordinate processor distinguishes button click commands from cursor move commands, however, only one type of button click command can be recognized and reported to the computer system at a time. To allow a specific set of stimuli to be recognized as a desired button click command and reported as same, Calder uses a predetermined value, NCLICK, which is set by application software prior to use. [Calder at col. 5, ll. 53-57.] If the NCLICK value is preset to 2, representing a double-click command, only a double-click operation (and not a single-click operation) will be reported to the computer system. [See Calder at col. 6, ll. 5-60, describing the recognition and reporting of a double-click command. Note that a single-click is not reported-col. 6, ll. 25-30.] For a single click to be recognized and

reported, application software must set the NCLICK value to 1. [Calder at col. 7, ll. 9-15.] However, once NCLICK is set to 1, a double-click operation cannot be reported. [See Calder at col. 7, ll. 16-45, describing the recognition and reporting of a single-click operation.] Because BCNT is reset to zero each time a single-click is recognized [Calder, col. 7, ll. 40-42], BCNT can never progress beyond a value of 1 and so no double-or multiple-click operations will ever be recognized or reported.

In contrast, claim 1 recites steps of distinguishing between a first cursor control operation (e.g., a drag), a second cursor control operation (e.g., a single-click) and a third cursor control operation (e.g., a multiple-click) and reporting same. These are features which the coordinate processor of Calder simply cannot perform as discussed above. Accordingly, Calder neither teaches nor suggests the method recited in claim 1 and clam 1 is therefore patentable over Calder.

Claim 11 recites an apparatus for operating a computer system which includes means for distinguishing between a first, a second and a third cursor control operation and for reporting a cursor control operation in accordance therewith. As discussed above, the coordinate processor described by Calder cannot distinguish between three cursor control operations and report one of the three in accordance therewith. It follows that Calder does not teach or suggest an apparatus including means for such distinguishing and reporting and claim 11 is therefore patentable over Calder.

Claim 30 recites a method of operating a computer system including the step of determining whether detected contact and gap intervals represent an operation type chosen from a list consisting of a cursor manipulation operation, a single click operation, a multi-click operation, a click-and-drag operation, a multi-click-and-drag operation, a drag operation, or a sticky drag operation. As recognized in the Office Action, Calder fails to teach or suggest a method which would allow a touch sensitive input device to recognize and report a sticky drag operation. Accordingly, claim 30 is patentable over Calder.

Please charge any shortages of fees to our Deposit Account No. 02-2666.

Respectfully submitted,

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